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No. 1860
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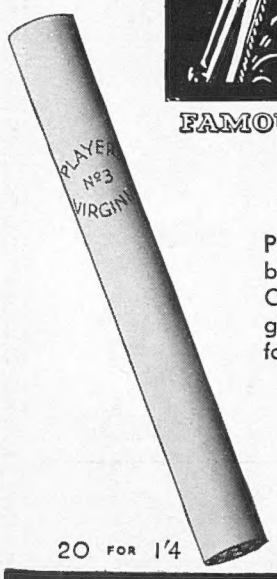

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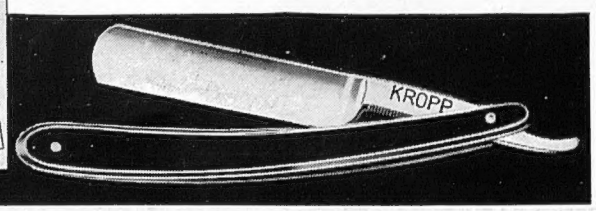

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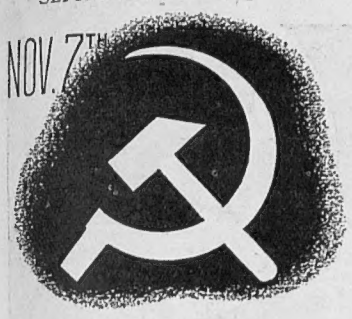

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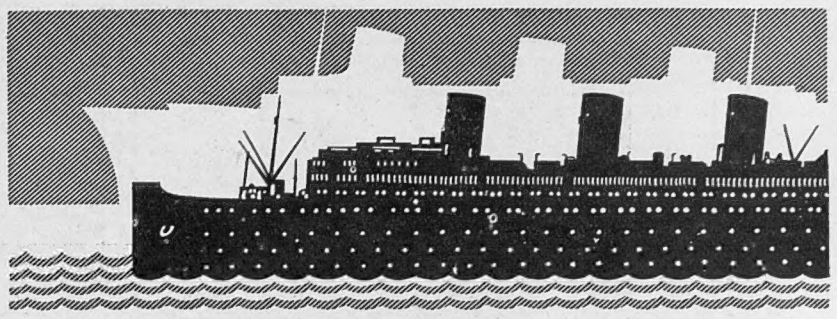

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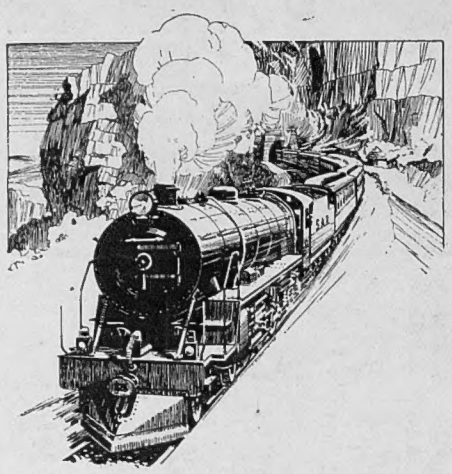

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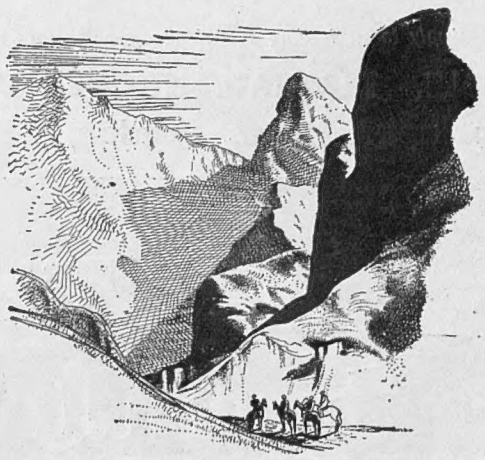

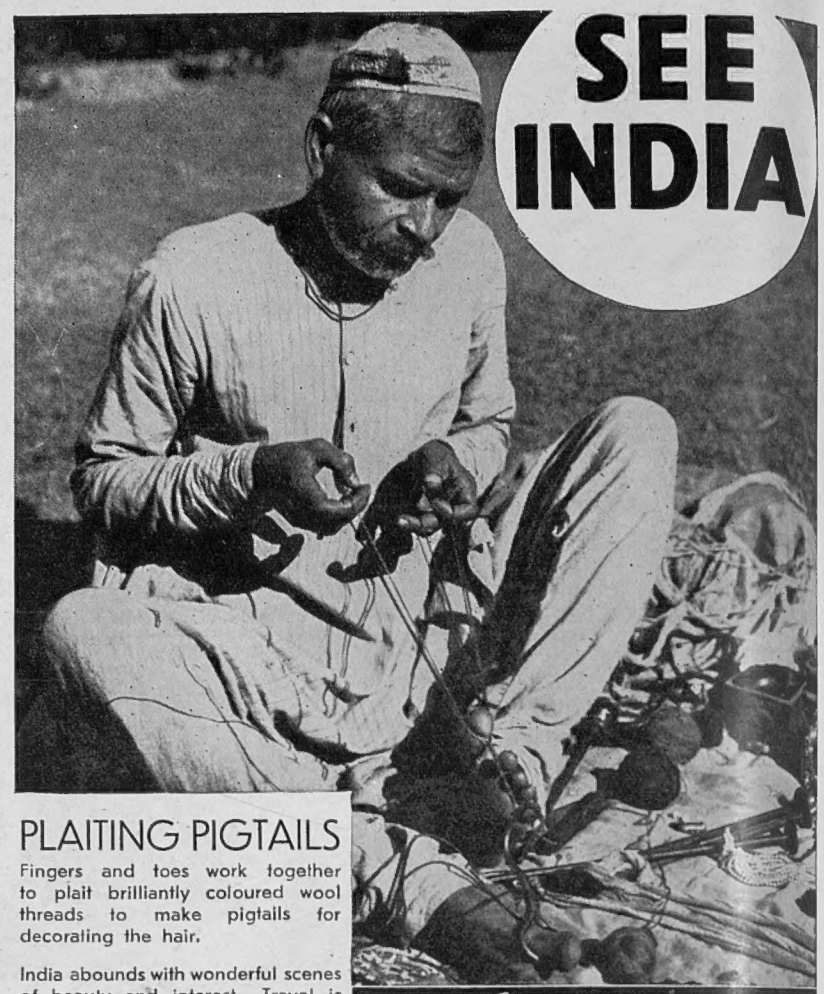

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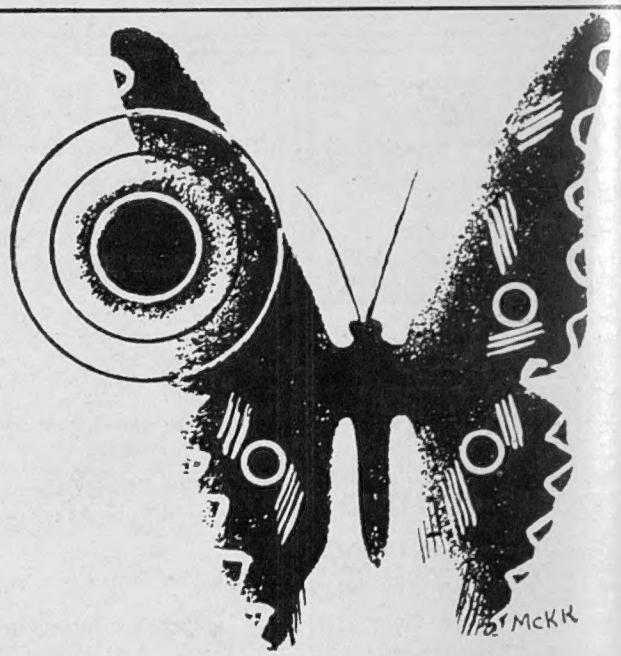

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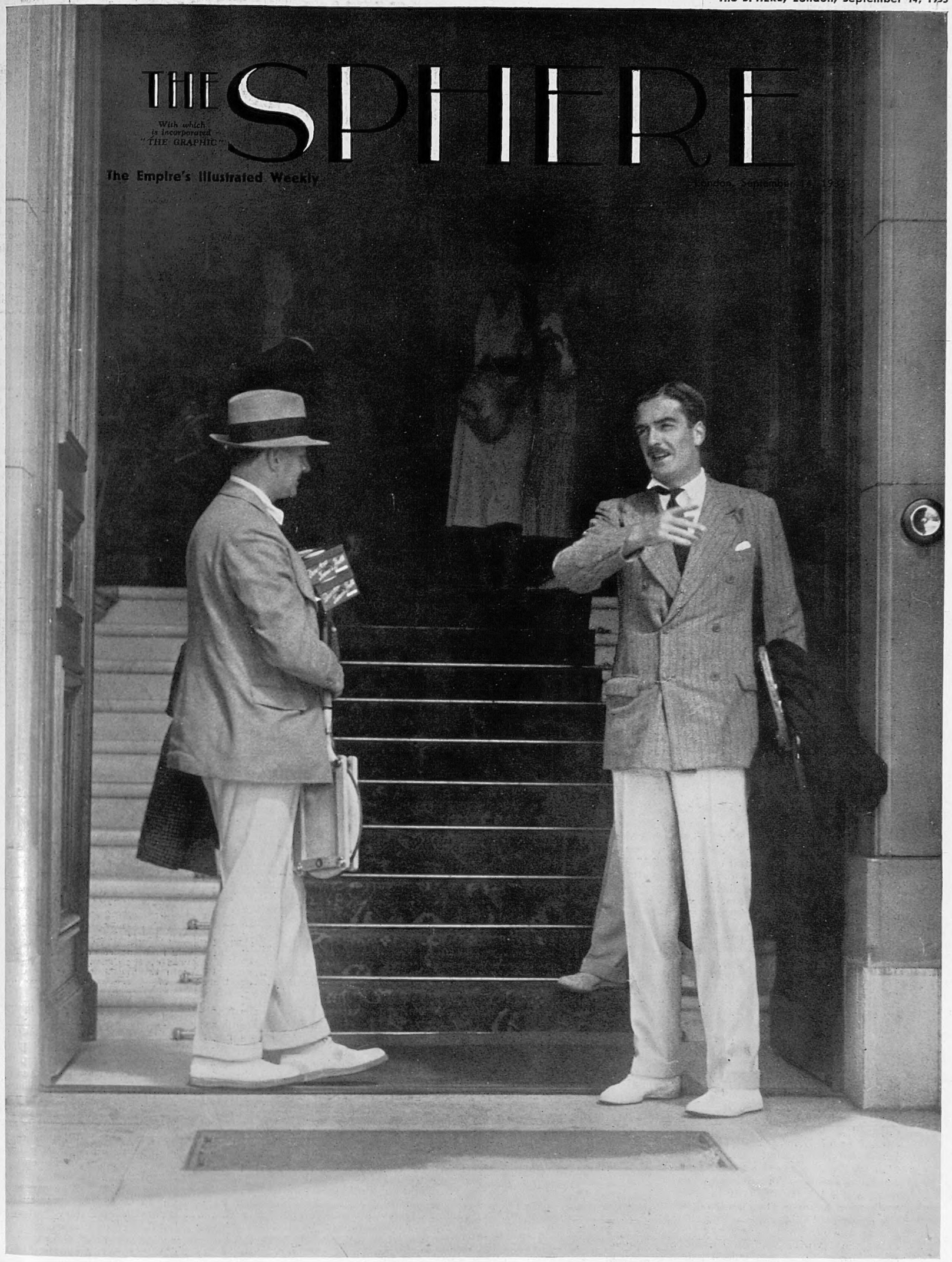

Calm in the Midst of Turmoil

Mr. Anthony Eden About to Leave His Hotel in Geneva to Play Tennis at Divon as a Relaxation from the Affairs of the League

Baron Aloisi's withdrawal from the Council Chamber at Geneva, Signor Mussolini's cry of "We Will Go Ahead" to his mobilising troops, and the Emperor Haile Selassie's offer of yet further concessions in the hope of maintaining peace, were the three outstanding events in an eventful week. The Italo-Abyssinian dispute is indeed reaching its nadir. Meanwhile, Mr. Anthony Eden, Britain's Minister for League Affairs, and Monsieur Laval, France's Prime Minister, have been trying their utmost to effect a settlement, but they have met with disappointment after disappointment as a result of Italy's indifferent attitude towards the League, and her chief representative's extraordinary tactics of obstruction. Mr. Eden is ideally suited to the role he is playing in this drama at Geneva, and this picture of him in tennis clothes typifies his untroubled demeanour at a time of crisis—an attitude that has done much to promote confidence

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THE KING'S SOLDIER SON VISITS HIS BRIDE TO BE: The Duke of Gloucester seen with the Duchess of Buccleuch, Lord Harry Scott, Lord William Scott, and Lady Alice Scott, in the grounds at Bowhill, the Duke of Buccleuch's Selkirkshire seat. His Royal Highness spent much of the week-end grouse shooting on the moor near Hawick, and was accompanied by his fiancée

A LONDON NEWSLETTER

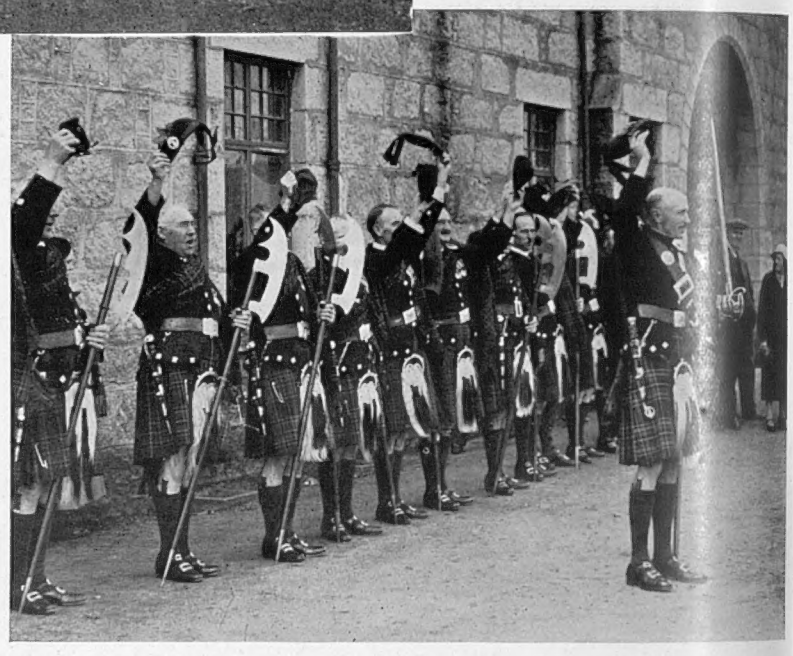
346, STRAND, W.C.,
Wednesday, September 11, 1935.

THE EVENTS AT GENEVA.—On the fateful fourth of September Italy gave out her furious indictment of Abyssinia. Her spokesman, Baron Aloisi, began and ended in a rage, presumably by orders from headquarters. His case against Abyssinia, in a few words, was that she was beyond the pale of civilisation and that nothing she could say in extenuation was worth listening to by civilised countries. Italy, at any rate, would not waste so much time. Nevertheless Professor Jeze, representing Abyssinia, was ready with his reply next day when the League again met to hear it. As soon as he began Italy's representative, taking his cue, walked out of the Assembly—to the pain, if not to the surprise, of the civilised nations. Earlier in the day a Committee of Five Nations (to report on the Abyssinian question) had been formed of representatives from Britain, France, Poland, Spain, and Turkey. Italy at once objected to the representation on that committee of Britain and France as being interested parties. Mr. Eden and M. Laval were to have been those representatives and their forlorn hope was to carry on the negotiations begun in Paris under the name of the Three-Power Conference. In those negotiations both Britain and France had shown a remarkable sympathy with Italy's needs, rights, and grievances. It was indeed patent to all concerned that Italy, with the date already fixed for beginning hostilities, was in no mood to agree to anything which might bring about a compromise which the civilised world would judge to be reasonable as an expedient for averting war. The Italian gesture was not taken to be Italy's first step in leaving the League. But it was clearly taken as final proof that she had no intention of risking a peaceful settlement. Every expert at her disposal is concentrated on the task of bringing her fighting forces to the highest state of efficiency. Meanwhile a world-wide campaign to avert war continues. The question of the enforcing of sanctions by the League raised in England a particularly interesting and important Press debate which served no more useful purpose than to show the sharp division of opinion among people in authority and to make clear the completeness of the fog which invests the League's powers, duties, and effectiveness in just such an emergency as this. War appears to be certain. The question remains, will the League survive it?

THE LAST HOPE.—In the end, Italy accepted the composition of the Five-Power Conference and went further. She agreed not to launch the dogs of war while the Conference continued to talk. Whether or not Mussolini expected it to stop talking before the rains ceased remains to be seen. If nations would undertake not to fight while the League continues to talk, the League's existence would be justified a hundredfold, with or without sanctions. On what, then, do the last hopes of today rest? The League can do no more than to press Abyssinia in the direction of territorial concessions and permission for foreign development just as far as she is prepared to go. No further. Abyssinia will not accept a mandate. It looks as if Italy cannot be satisfied with the utmost that Abyssinia can possibly concede. It is a last and faint hope. After that fades, there is the question of sanctions on which at the eleventh hour France has made a declaration construed as favourable.

THE SURPRISE ITEM.—Mr. Rickett's coup came at a psychological moment for success—as a surprise item at the beginning of a fateful week. Indeed, nothing more embarrassing or less expected could have been devised by the Spielman to upset a tottering applecart. The governments of the Great Powers woke to find the seeds of dissension and distrust obscuring the view from their windows, like mighty trees sprung up in a night. Britain found herself once more suspect by France; perfidious Albion, the nation of shopkeepers, determined to have her fingers in the cream, while preaching pious political platitudes. America feared that her determination to keep out of the political trouble might be seriously affected by the commercial coup which citizens of hers had engineered. France felt that she had been robbed of a commercial plum by sharper and quicker brains in commerce. Italy, throwing her last guinea, with the undeveloped wealth of Abyssinia as the stake, saw half that wealth signed away to foreigners already glutted with wealth. The King of Ethiopia laughed in his beard, and the mysterious Mr. Rickett (too little known to the man in the street) grinned from the open page (wearing the uniform of Melton) like the Spielman of the mystery play. Fortunately it proved that British money was not after all involved in the ill-timed commercial speculation.

THE END OF DICTATORS.—Thinking calmly of dictators, the causes of their rise and fall, their triumphs and difficulties, is an interesting exercise for the mind at this moment. Most of the year their actions provide the day with news too sensational to admit of calm reflection on wider issues. The day's crisis may make a paragraph in history; but if one could, by reflection, reach a generalisation about the inevitable fate of the modern dictator, one could perhaps forecast the trend of history. And to turn and con the uncut pages would be thrilling enough. It is my view of the leading dictators of Europe that they cannot justly be compared (as they constantly are) with great statesmen in history. They do not carry the guns; intellectually, in experience, in patience, constructive ability, character, they are altogether inferior. The circumstances which give them their chances to rise and seize popular imagination and power have varied in different countries. The Italy which Mussolini snatched was in a very different state to the Germany which gobbled up Hitler. But one may generalise so far as to assert that in the case of modern dictators of their genre it is not so much the hour that finds the man as the man that finds the hour. Their genius lies in knowing when to strike and how to keep the hammer going. Thus their lease of power depends on constant action and constant force. They can never rest, must never relax; always they must hit hard and on the head. They are all a little mad—and look it. They not only must be first-class actors but they must be coolly aware that all depends on their playing a part, daubing on the grease paints, keeping in the limelight, miming and ranting at all hours.



THE PARADE OF CLANSMEN: The Balmoral Highlanders whose march past to the music of the pipes, with the Invercauld Highlanders and the Duff Highlanders, was one of the most impressive features of the Braemar Gathering which was held last week in Princess Royal Park in the presence of Prince and Princess Arthur of Connaught, the Marquess of Aberdeen, and other notabilities

THE ROLE OF "ERCLES."—Their very utterances must be cut in broad chunks for stage purposes. They must over-act, rant loudly, mouth and mow, so that the dim rows of the pit and gallery may taste them undiluted. There is no return for them. They cast themselves (and the public has endorsed their choice) for 'Ercles and they must "play 'Ercles rarely" till they drop. They must die with the grease paints on them and come to a sticky end, and they know it. These are reasonable generalisations and give one cause to tremble for dictator-ruled nations. The old statesmen of history had their faults, but for the nations whose destinies they guided they could show advantages over the modern dictators, tremendously great. Their intellectual qualities and experience were infinitely higher. Their position was assured while in power, and if they fell from power they could, and would normally, regain the lost rung without a struggle and without loss of principles. In a word, they had no need to watch the clock, had no reason to dread the passage of time; had no personal fight for survival and could devote all their brains and energy to fighting for party and country. Your dictator for ever wages a double battle. A personal fight for survival and a fight for his national policy. The issue of the second depends wholly on the first.

And Time is his relentless enemy. No week can pass but he must make his presence felt and get his voice "across." And for their two-fold, treble, multiple, unceasing battle, they start equipped with very inferior guns to those which the great statesmen of old carried.

G.W.R. CENTENARY.—

No one with any pretence of imagination could fail to be moved by last week's centenary of the G.W.R., and the great newspapers did it full justice. In the conquest of time and space almost all our progress has been made within that span, that little span in the immeasurably long history of the human race. About 100 years ago Sir Robert Peel was summoned from Rome to form a government. He posted home while the Duke of Wellington acted Pooh-bah for him in Whitehall. He took just exactly as long to accomplish the rush-journey as did a new pro-consul to Roman Britain 1,500 years earlier. That is an arresting thought. To-day one hops to Rome between breakfast and luncheon. To-day the G.W.R. averages 70 m.p.h. over long runs, but it is fair to the pioneers to remember that their expresses attained to fifty miles an hour very early in the railway movement. The great smooth-running system whose gate is Paddington Station, carries you to Penzance, to Milford Haven, to Chester, and to every city within that North-Western triangle. Cardiff and Birmingham and Bristol are its great key-cities. It opens the gates of Shakespeare's country, Drake's country; it monopolises Wales, specialises in Cathedral Cities, including Winchester, Salisbury, Exeter, Wells, Oxford, Hereford, Worcester; and it caters for a sea-coast of immense length and variety and charm. It serves a mining area, once of immense value, and industrial centres which wax and wane in importance. It carries you to Ireland and the Channel Islands.

THE PRIMATE OF HUNGARY IN ENGLAND: Cardinal Justinian Serédi (*left*), Archbishop of Esztergom, being greeted at Dover by the Prior of Downside (*centre*), when he arrived in this country to consecrate on behalf of the Pope the new Abbey Church at Downside. Dr. Serédi, who is the eleventh son of a Slovak stonemason, has had a remarkable career, and in 1927, when only forty-three, he was promoted to the Prince-Primateship straight from being a rank and file member of the Benedictine Order. His meteoric rise is said to have been in part due to the late Cardinal Gasparri, who early recognised his talents

Its centenary brings back to notice the name of Isambard Kingdom Brunel, its first engineer, a Norman invader who helped to work in England a revolution greater than that of William I. His work was the Clifton Suspension Bridge, the Sunderland and Bristol Docks, and great sections of the railway system now commemorated. The centenary recalls also the name of Frith, who followed up his best-seller among crowd studies (Derby Day) with the equally popular and successful picture of the departure of a G.W.R. train from Paddington, one of the most complete and vivid impressions of the England of 1860 ever recorded. For the pen of the most brilliant and erudite social historian could tell us no more. Other names which the centenary records are those of its more notable chairmen, Charles Russell, F. G. Saunders, Alfred Baldwin (father of our Premier), Lord Cawdor (grandfather of the present Lord Cawdor and sometime First Lord of the Admiralty), the late Lord Churchill, and now Sir Robert Horne. Of its great engineers and organisers the list is too long to choose from. My only personal criticism of this famous and illustrious system is that it cannot carry me more quickly between Newport and Pembroke. From London to Newport is a matter of less than three hours. Thence onwards to Little-England-beyond-Wales one may spend a long and dreary day of Parliamentary travel.

WILL ROGERS.—

In the rapidity of movement of men and events in modern life great men and things have but a brief hour in memory before they join the shadows. Accidents by air and on the road have carried off more than one famous personage since Will Rogers met his death. A note on the man from America which reached me yesterday is still worthy of record. His death caused in America a greater shock and deeper grief than would have that of any other of her most illustrious public men. He was a "Court jester" of the medieval type, but jester to a nation and not to a king. The Court jester of old was "no fool," but a shrewd appraiser of human frailties and tendencies. He carried the guns that enabled him to rebuke his royal master. Sometimes he corrected the King's conscience and directed his policy. Rogers did for the American nation what the King's jester did for medieval sovereigns. He was a natural wit who veiled his rebukes in the fine lace of humour. He rebuked their excesses and ridiculed their conceit when it obtruded, in days of over-prosperity. Of course he was a millionaire; the press, radio and films who serve the public and give it what it cries for, saw to that. But riches did not turn his head, blunt his wit nor dilute his humanity. He was one-eighth of Indian blood (Cherokee); he was proud of the fact, as all Americans who can claim red-Indian blood, are proud. And he died because his friend was poor and proud. For Wiley Post's machine was a thing of scrap, hastily assembled at Seattle from old junk. Had Rogers known its air-worthlessness, he would have given Post the money for a sound and modern machine—it would have been nothing to him; he was paying for the trip—but he did not know. And so America lost her one and only God-sent Jester and Corrector. Compared to Rogers, poor Huey Long was but an inconsiderable knockabout.

THE LONELIEST ROAD.—

The other day I made from Ardgay in Ross-shire, a circular tour which must have covered the loneliest stretches of

THE WINNER OF THE KING'S CUP: Mr. Thomas Rose with the trophy presented to him at Hatfield Aerodrome by Sir Philip Cunliffe Lister, Air Minister, after his victory last Saturday in the great air race in Viscountess Wakefield's *Miles Falcon*. At the end of the fourth of the seven laps he was minutes ahead of his nearest rival and his average speed over the distance was 176·28 m.p.h.

road remaining in Britain. We went by Loch Shin and Loch More with Ben Stack and Ben Arkle to guide us on, past the Duke of Westminster's lodge and on to Laxford Bridge; by Rhiconich and, leaving Cape Wrath and its lonely hotel on our left, to Durness, across a waste of rocks and moor. Near Durness, we visited the famous and eerie cave of Smoo and turned home again by the coast road, circling Loch Eriboll, and north again round Loch Hope. Here began the heights of solitude round Ben Hope, and Hope Lodge is surely the loneliest lodge in the Highlands. The next thirty miles of track must be driven at a speed of no more than 20 m.p.h. The track is utterly lonely. Nothing is to be met with but deer in herds or small parties. The silence is absolute. The loneliness is almost painful to people used to the roar and rush of civilisation. For two hours a man is as much alone as on the Great Barrier Reef and as much lapped in silence. At last one reaches Altnaharra, which seems by contrast a metropolis, though it is but an oasis between two broad stretches of utter solitude. A memorable tour. If one's car broke down . . .? But Fate was kind. My car broke down . . . at the garage door! I had but ten yards to push it.

BOMBS OR SWANS.—

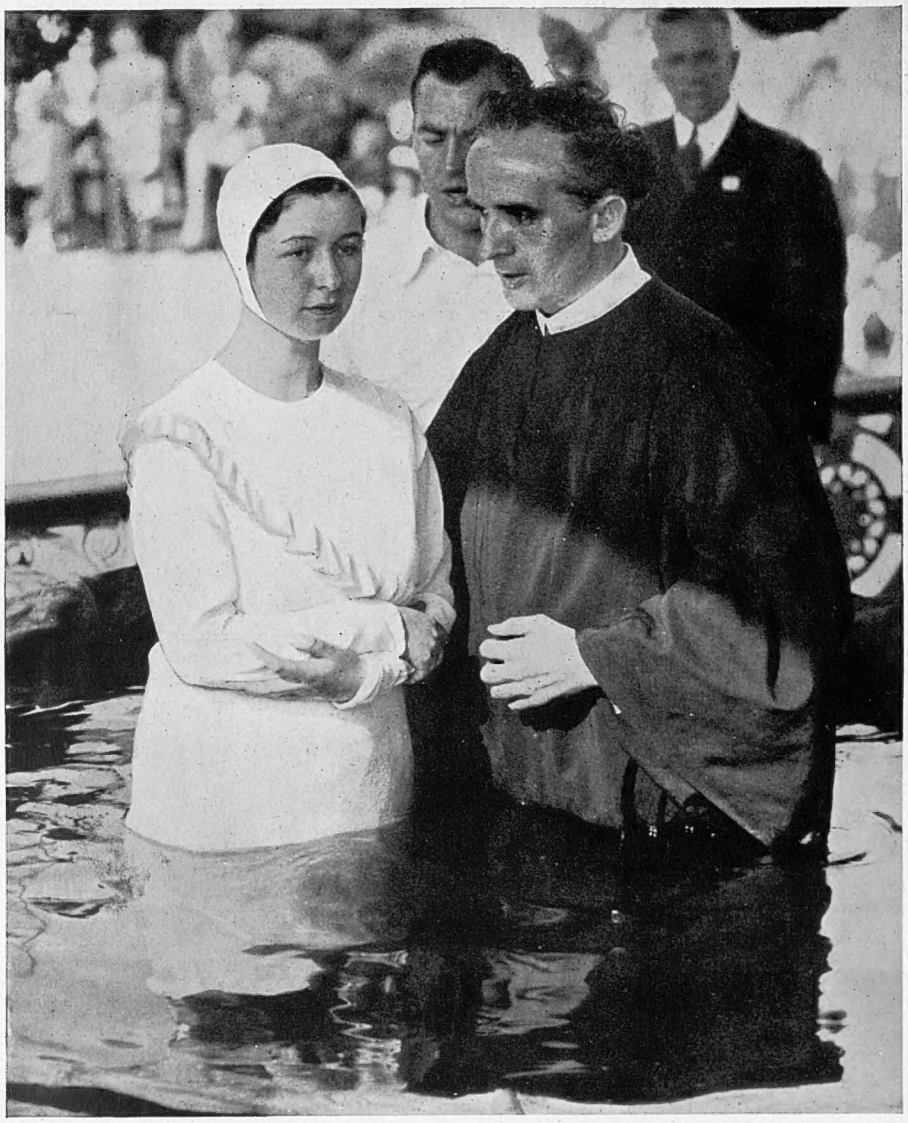
The Air Ministry, in spite of protests from all quarters, has decided to make an air-bombing range of the Chesil Bank. And no doubt, if European wars are to be the principal diversion of civilisation for the next decade, these ranges must be built and thoroughly used until our experts can make a certainty of browning a body of white or black human beings with deadly effect at respectable ranges. Meanwhile, the use of Chesil Bank for this purpose will turn into hell one of the most enchanting and unspoilt corners of Dorsetshire, ruin a fishing industry which employs hundreds of men at Chickerell, and most likely destroy the swannery at Abbotsbury which has a continuous record going back to the beginning of English history. Strong, restrained, and reasoned objections to the use of the site were put in by the Dorset C.C., the Dorchester R.D.C., Portland U.D.C., and Chickerell Parish Council; by Lord Crawford, by Dr. Calman, representing the British Museum, and the Linnean Society; by the Royal Society for the Protection of Birds, by Mr. Julian Huxley, representing the Zoo, and of course by Lord Ilchester, officially and individually, as owner of the Swannery which has already been endangered by the failure of the particular weed on which for centuries these swans have thrived. The home of Nelson's Hardy at Portisham overlooks the Chesil Bank. Hardy was a seaman, very much in advance of his age in matters of naval armaments and entirely devoted to the Service. He cared no doubt more for naval efficiency than for his native Dorset, for he was a plain and unsentimental man. No doubt he would have signed away his inheritance for the good of the Service very cheerfully, and left his old sisters to hold their ears and shudder at the bombing. For the French were devils in those days, and had to be exterminated. But times are changed now. We have no foreign "devils" and don't wish to kill anybody. Therefore it is reasonable to suppose that many Dorset and other worthies, devoted to their country, may deplore the necessity for practising murder and may infinitely prefer swans to bombs.

A GOLF TOUR IN THE UNITED STATES.—

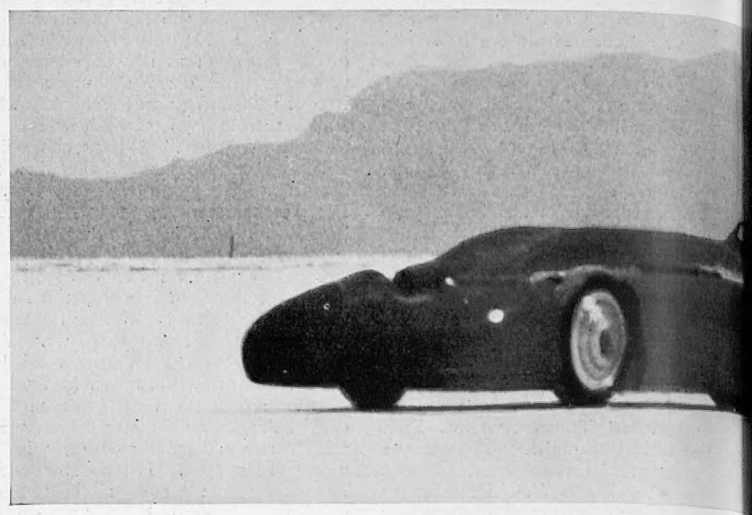
I was delighted to read that Miss Wethered's American golfing expedition had been a tremendous success. I warmly applauded her decision to accept the offer made to her, having for years considered that the whole subject of amateur status in golf and lawn tennis needs restating. Miss Wethered drew huge crowds and made friends wherever she went. She met her old enemy, Bobby Jones, on even terms and finished the round on a tricky, trying course only three strokes behind his par 71. She was induced to alter her grip on her putter "to cope with the differences in American greens" (this suggests to me that golf is an even more intricate and difficult problem than I knew) and she returns to England in triumph, having in a few short, pleasant weeks earned a modest fortune of £4,000 or £3 a week in perpetuity—by merely playing friendly games with old friends in her accustomed form. Easy money (says you)? But it must not be forgotten that the weight of her name was not achieved without infinite patience and infinite labour over a long period of time.

THE OLD STAGER.

A SPHERE SURVEY:

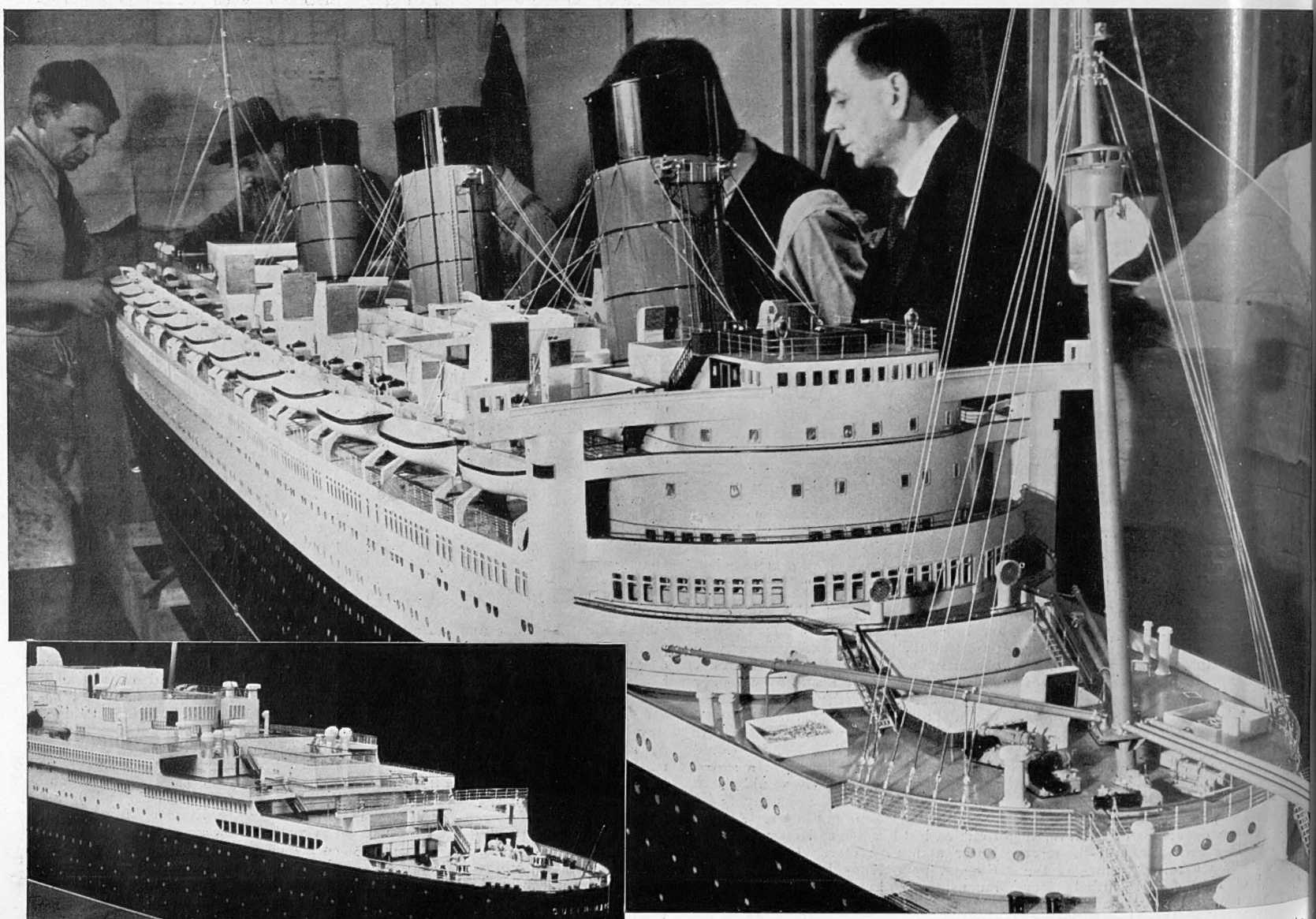


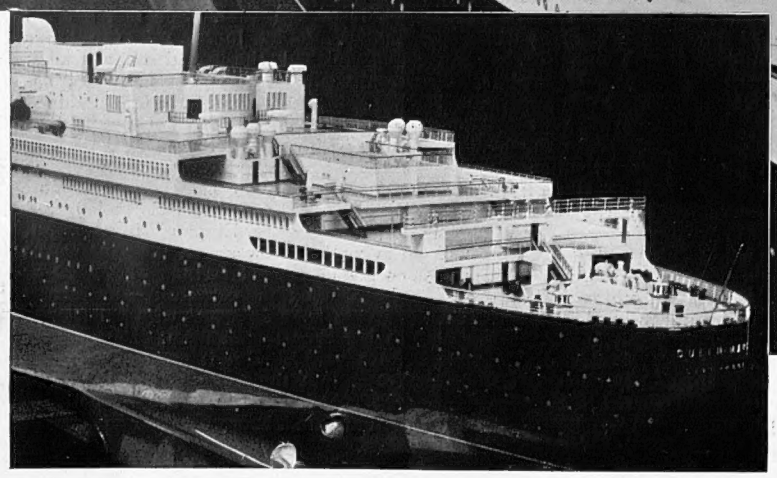
FAITH: Principal George Jeffreys baptising Miss B. Brasford when conducting an open-air service at the Crystal Palace on Saturday last in connection with a largely attended Four-square Gospel Rally. The immersions took place in a special tank erected in the bandstand



BRITAIN'S SPEED KING DOES IT AGAIN: An impression of Sir Malcolm Flats, Utah, on its recent record-breaking run which brought the world's land general disappointment when the figure was announced to be 299·875 m.p.h. in the timing official's calculations and that Sir Malcolm had indeed achieved

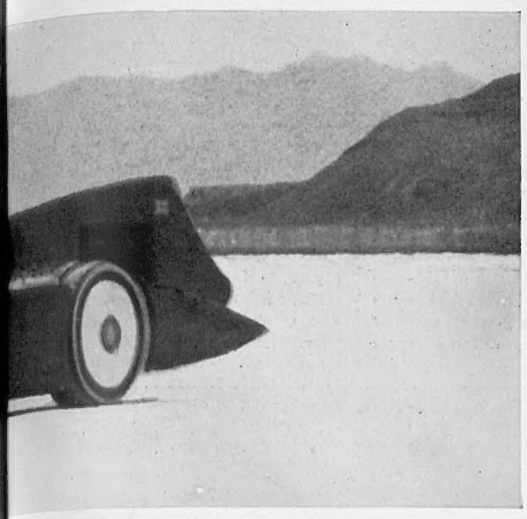
BEFORE AND AFTER THE RECORD-BREAKING RUN: (*Left*)—Officials examining desert to help Sir Malcolm to guide "Bluebird" on its course. (*Right*)—





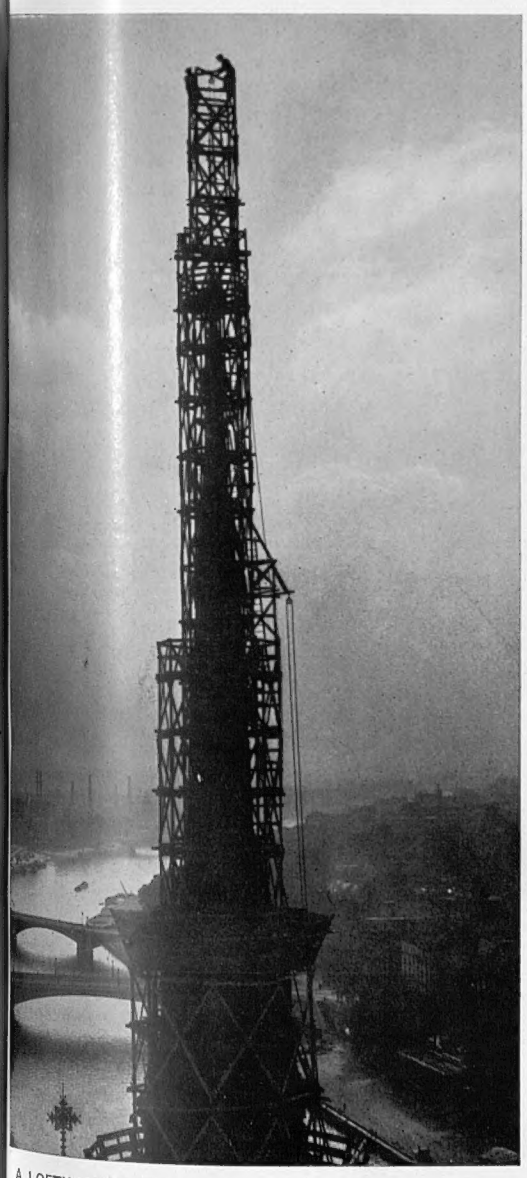
Above and on left—THE "QUEEN MARY" IN MINIATURE: Men engaged in putting the finishing touches to the model of the giant Cunard-White Star liner which was placed on show at the Shipping, Engineering, and Machinery Exhibition when it opened on Thursday last. Thirty skilled craftsmen have been employed for the past ten weeks in building the model, and over 2½ tons of timber are said to have been used in its construction

A Pictorial Record of Current Events at Home and Abroad

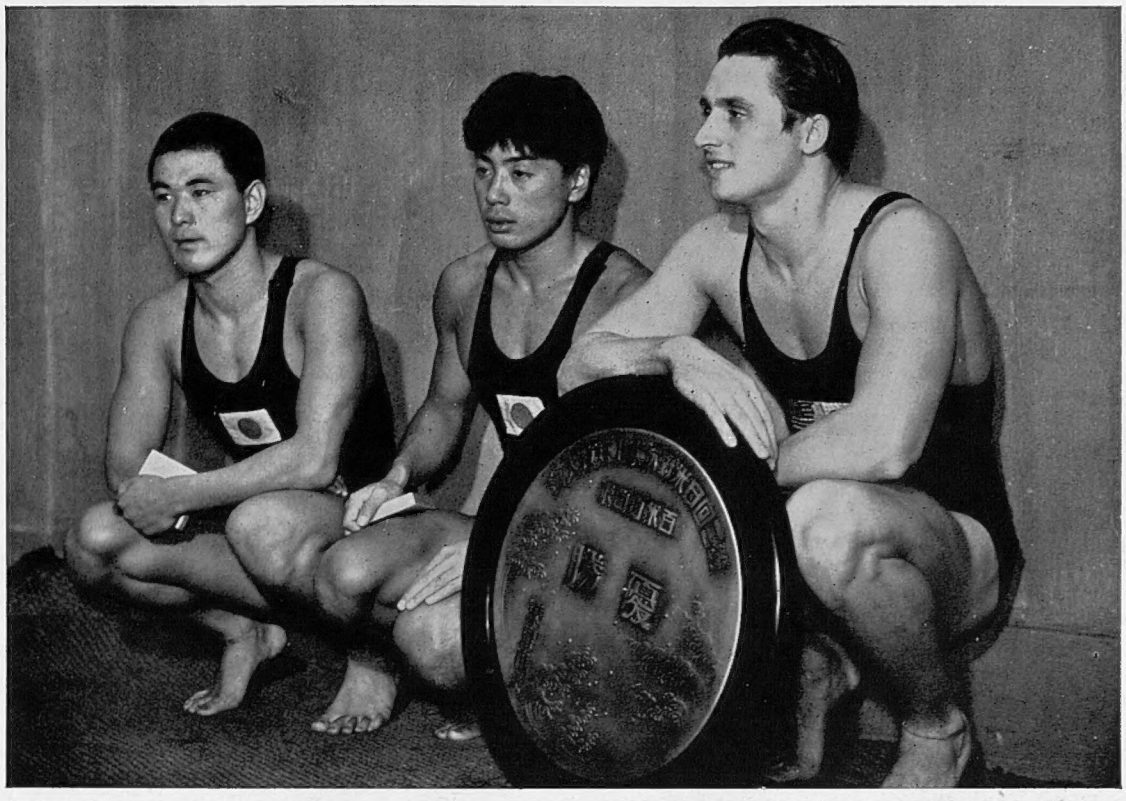


ampbell's "Bluebird" as it roared across Bonneville Salt eed record up to 301·1292 m.p.h. At first there was ut it was found afterwards that a mistake had been made s ambition of travelling at the rate of five miles a minute

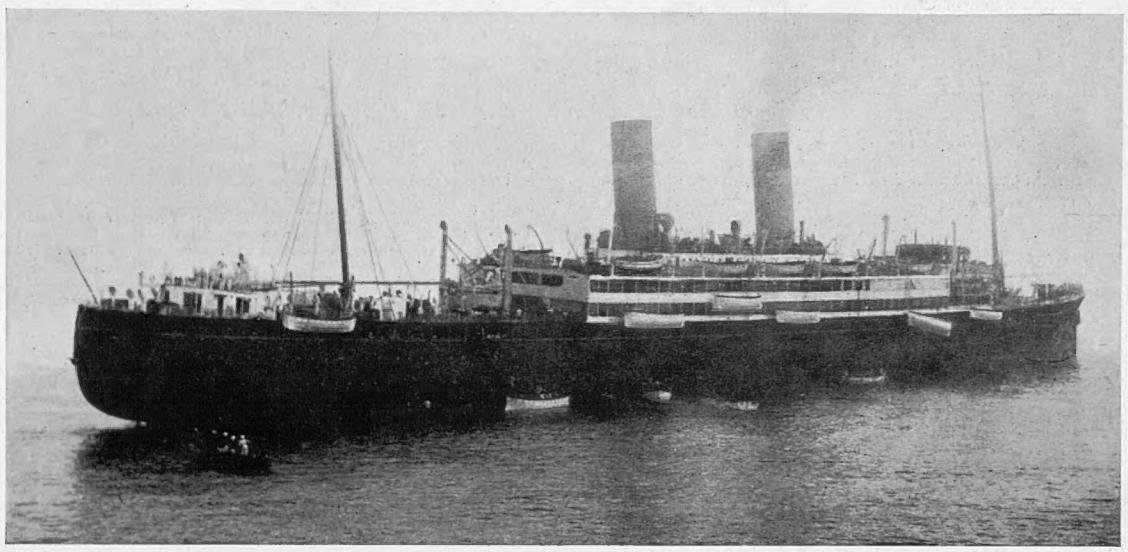
he 13-mile-long strip of oil which was laid across the Utah he car covered with salt thrown up by the wheels



A LOFTY UNDERTAKING: Workmen engaged at the summit of the scaffolding in the restoration of the 148-ft. spire of Notre Dame Cathedral, which has not needed attention since it was erected in the middle of the last century. It is constructed of wood covered with lead



SPORT IN JAPAN: Peter Frick, of the United States, seen with his trophy after winning the 100-metres free style race at the swimming meeting held recently in Tokyo between evenly matched teams from Japan and America. On the left are M. Yusa and S. Araï, who finished second and third and were only beaten by a narrow margin



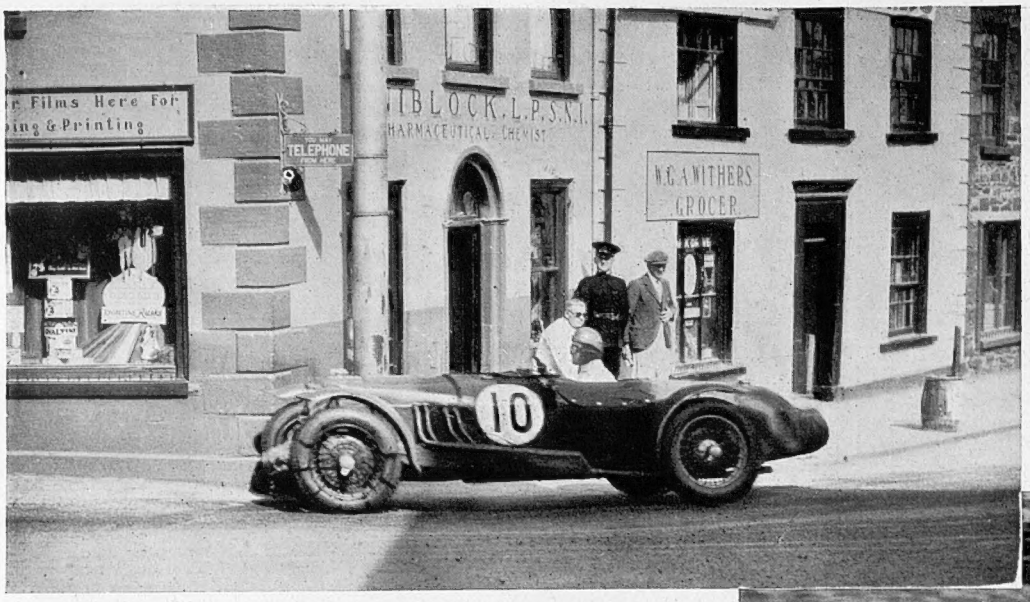
A GIANT IN DISTRESS: Lifeboats being lowered after the Cunard-White Star cruising liner *Doric*, of 16,484 tons, had collided in a dense fog off the coast of Portugal with the French steamer *Formigny* (2,166 tons). The liner was holed on the waterline in the starboard bow, and, although there appeared to be no danger of sinking, the captain thought it wiser to transfer his seven hundred passengers to the *Orion* and the *Viceroy of India*, which appeared on the scene following the crash. The *Doric* afterwards proceeded under her own steam to Vigo for repairs

THE END OF AN ALL TOO ADVENTUROUS CRUISE: Passengers seen after disembarking from the *Viceroy of India*, the P. and O. liner which brought them back to England after they had been transferred from the damaged *Doric*. Nearly all of them paid tributes to the coolness and efficiency of the *Doric's* crew during the emergency. Four of the passengers were particularly unlucky as only a few weeks ago they were also involved in the collision in the Irish Sea between the Cunard-White Star liner *Laurentic* and the Blue Star freight steamer *Napier Star*

Thrills and Spills in the "T.T."

Last Saturday's Race at Belfast

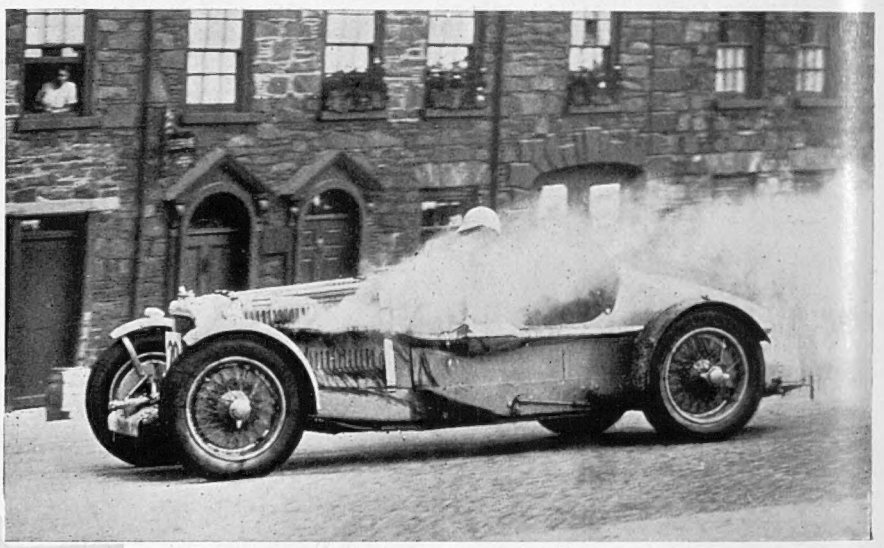
"Freddie" Dixon, always a popular favourite with the crowd, gave the most spectacular performance of his career when he won the R.A.C. Tourist Trophy Race on the Ards Circuit at Belfast last Saturday. He drove one of the new 4-cylinder 1½-litre Rileys and over 464 miles averaged the amazing speed of 76·9 m.p.h. Dixon's engine gave no trouble from start to finish and he only stopped once to fill up with petrol, but he had one narrow escape when he got into a skid as he rounded the Newtownards corner on the sixth lap and slithered right across the square. The runner-up was E. R. Hall (Bentley) who was also second in the race last year. Earl Howe was third



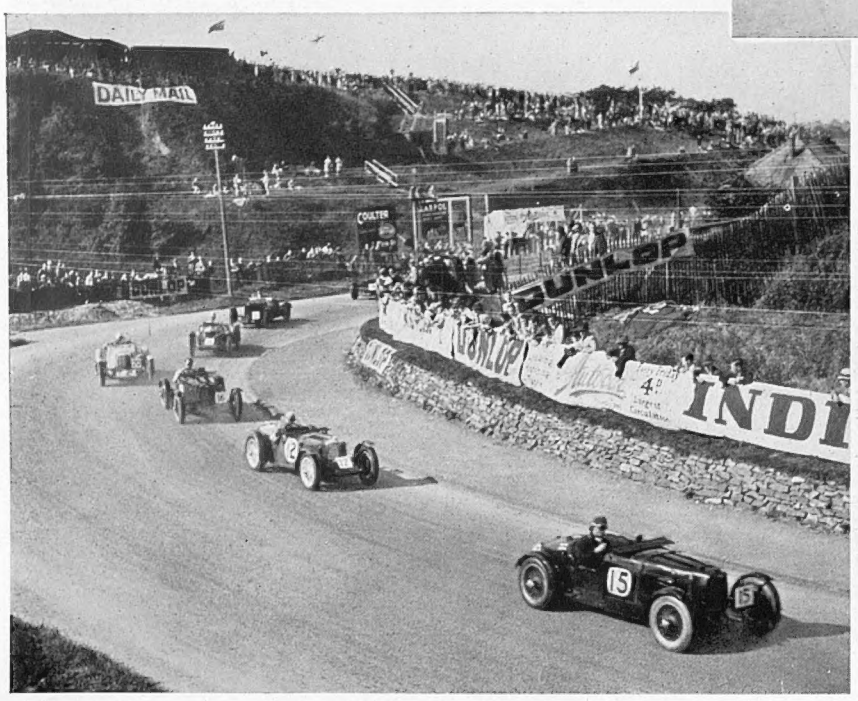
THE VICTOR: "Freddie" Dixon provides a fine example of close cornering when passing through Comber during the early stages of the race and before he had taken the lead. His daring driving received tremendous applause from the thousands of spectators lining the course

AT QUARRY CORNER: Another impression of Dixon going all out when hotly pursued by his more powerful rivals. It was remarkable that he was able to travel at such tremendous speed in spite of the fact that for part of the time he did not wear goggles

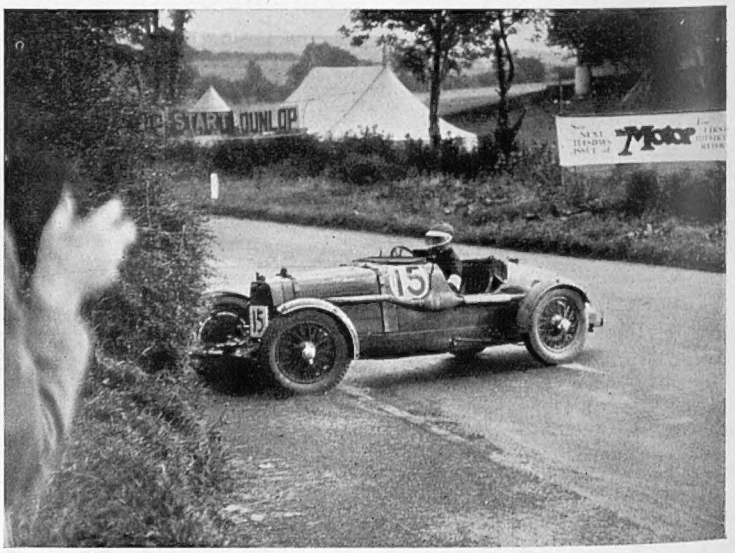
A MOTORING MIRACLE: These two Singers (one driven by Norman Black, a previous winner of the T.T., and the other by S. C. H. Davis) came to grief within a minute of each other at exactly the same spot. Fortunately both drivers were unhurt although slightly shaken



IN DIFFICULTIES: Smoke streaming from the Aston Martin driven by Prince Birabongse of Siam, which had to retire with a broken oil pipe before the finish of the race. Other cars of the same make had similar trouble, and at one time four were at the pits together; but in spite of this three of them won the team prize by their splendidly consistent running over the difficult course at over seventy-five miles per hour



ALTOGETHER AT THE BEND: A bunch of competitors rounding Quarry Corner, one of many danger spots on the thirteen-and-a-half-mile road circuit. The fourth car is the beautifully finished blue Aston Martin driven by Prince Birabongse of Siam



IT MIGHT HAVE BEEN WORSE: This car skidded and charged the bank at the side of the road during a practice run on the day before the race

CRISIS AT GENEVA

Personalities at Last Week's Meeting of the League of Nations during which the Italian Delegates Made a Dramatic Withdrawal

THE CLIMAX OF A DAY OF DRAMA: M. Laval, the French Premier seated at the head of the horseshoe table during the fateful meeting on Thursday of last week when Baron Aloisi, Signor Mussolini's representative, and his colleague, Signor Rocco, withdrew from the Council Chamber on the grounds that they would not sit and listen to the insults of Professor Jeze, one of the representatives of Ethiopia. The chair on M. Laval's right was that occupied by Baron Aloisi

THE PERMANENT ETHIOPIAN DELEGATE TO THE LEAGUE: M. Tecle Hawariat, the distinguished Abyssinian diplomat, who is playing an important part in the negotiations at Geneva

BETWEEN SESSIONS: M. Laval, the French Premier and Foreign Minister, in conversation with one of the League experts

A WOMAN DELEGATE: Madame Alexandra Kollontay, the Soviet Minister to Sweden, who is representing her country at Geneva

ITALY'S AGGRIEVED REPRESENTATIVES: Baron Aloisi and Signor Rocco leaving the League building after their dramatic withdrawal from the meeting. At first their tactics spread consternation throughout the Council Chamber until it became apparent that the move was carefully planned, and was probably no more than a gesture to satisfy Italian public opinion

BRITAIN'S MINISTER FOR LEAGUE AFFAIRS: Mr. Eden (centre), who, according to one report, was the only statesman of the interested Powers to remain calm and collected after the withdrawal of Baron Aloisi and Signor Rocco

AN ARDENT SUPPORTER OF THE LEAGUE AGAINST THE TENDENCIES OF ITALIAN POLICY: M. Litvinoff, the Soviet Minister for Foreign Affairs, reading a paragraph in a paper brought to his attention by one of his fellow delegates

The League continues to make desperate efforts to find a settlement to the Italo-Abyssinian problem, but the impression gained by expert observers of the situation is that Signor Mussolini, in spite of having waived his objections to the appointment of a Committee of Conciliation, is still firm in his purpose to make war in East Africa. He has already massed 250,000 men in Eritrea and Italian Somaliland; he has called up yet more troops in Italy and fired them with his own enthusiasm; and it is felt that having committed himself so far he will be reluctant to withdraw, and so suffer a setback in prestige. There is hope in the fact that Haile Selassie is prepared to go to considerable lengths to maintain peace, and it has even been rumoured that he would agree to any concession short of the disappearance of Ethiopia's national existence

HUEY LONG:

Camera Studies of the Louisiana Dictator who was Assassinated this Week in the Lobby of the State Legislature

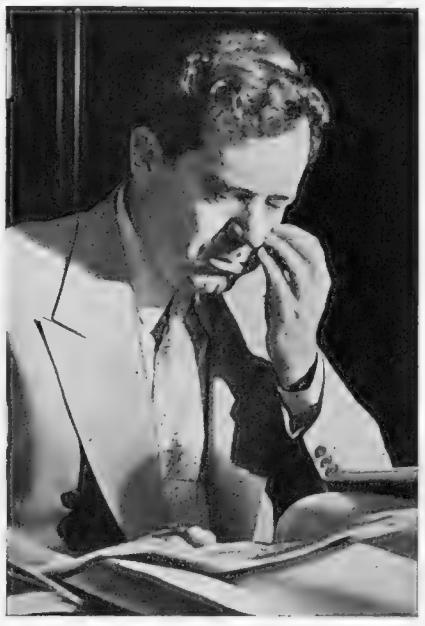
DENIAL

REPOSE

HILARITY

ATTENTION

RELAXATION



CONCENTRATION

SENATOR LONG, of Louisiana, who died last Tuesday after having been shot by a young doctor in the State Legislature at Baton Rouge, was essentially a politician of the American Depression era. When a year or two ago he first loomed large on the political horizon he was regarded as something of a mountebank, and people were inclined not to take him seriously. Latterly, however, his share-the-wealth scheme won him a host of adherents and, even though this 9d. for 4d. policy was economically unsound, there is no doubt that if he had lived he would have been a serious rival to Roosevelt, and might even have secured his defeat in the next Presidential election. Long was a brilliant orator and a competent lawyer, but he was a man whom the United States as a nation had good cause to fear

A TRIO OF FILM STARS IN TOWN THIS WEEK: Douglass Montgomery, and Mr. and Mrs. Fredric March seen as they arrived at Plymouth last Monday on the *Normandie*. Mr. March is perhaps Hollywood's greatest character actor and many will remember how in *The Barretts of Wimpole Street* he made audiences forget his pronounced American accent by his superb interpretation of the part of Robert Browning

THE ROBIN HOOD OF THE SEA: Count Felix von Luckner, who as the master of a German windjammer played havoc with Allied shipping during the war, waving a greeting when he arrived this week with his wife at Croydon Aerodrome. This is his first visit to England since 1902 and he has come, he says, in the hope of meeting some of his old enemies

SIR CHARLES HIGHAM, the well-known advertising expert, speaking at the opening of the Professional Photographers' Association's Exhibition

PRIDE OF PLACE: This plaque has been put up outside No. 13, Birmingham Street, Southampton, where the late Aircraftsman Shaw, better known as Lawrence of Arabia, rented a back-room for over a year

A KEY POSITION: Lake Tana, in the Amhara province of Ethiopia, which is of the greatest importance to Britain as it is near the source of the Blue Nile, and here the flow of the great river could be regulated to assist in the irrigation of the vast cotton-growing areas of the Sudan

NORTHERN ETHIOPIA: A sketch map showing the position of Lake Tana for which Britain offered Haile Selassie £1,000,000. The offer was refused

The Significance of Lake Tana

A Remote Spot in North-East Ethiopia in which Britain is Vitally Interested

THE words "Lake Tana" have been much in the news of late. We hear of special mechanised Italian divisions whose sole object is Lake Tana, of concessions being granted by the Emperor of Ethiopia for the control of its waters, of its possession being the only real reason for British opposition to Italian plans for warring on Ethiopia, and so on. Lake Tana is, in short, by way of becoming the Fashoda of to-day.

Where and what is Lake Tana? Remote in an inaccessible corner of north-west Ethiopia, in a mosquito-infested neighbourhood, and with its waters largely running to waste, it lies, neglected but not forgotten. It is situated in a somewhat fanatical and certainly primitive province of Ethiopia, and is about half-way between Addis Ababa, the capital, and Kassala, which is now one of the most important cotton-growing areas of the Sudan. Internationally, Tana is tremendously important. Why? Because into and out of it flow the waters of the Blue Nile—the Abbai, as the Ethiopians call it.

Lake Tana is a depression in mountainous country, though it itself is at the relatively low level of 1,840 metres above the sea. It comprises an area of about 3,000 square kilometres. Round its shores, which for the most part are steep but in places consist of papyrus swamps, and also on the numerous islands in the lake, are several churches. In this fact has lain, in part at any rate, the explanation of Ethiopia's previous hostility to foreign exploitation of the Blue Nile waters. One church, that of Stephanos, is said to contain the most ancient archives in Ethiopia and also mummified bodies of former kings of the country.

The Ethiopian clergy are intensely jealous of their privileges, and it is an easy matter for them to stir up suspicion of the foreigner in the minds of their ignorant countrymen. As example of this ignorance, I may recall the fact that when two officials from Egypt and the Sudan, some fourteen years ago, went to survey the Lake (with the permission of the Ethiopian central authorities) the local Abyssinians thought that the pieces of red and white cloth used on ranging rods were flags, and that the foreigners were claiming possession of the country! Again, when sticks were placed in the water from rocks for measuring purposes, the rumour was spread that the foreigners were poisoning the water and preventing it from rising!

THE BLUE NILE OR ABBAI RIVER TWO MILES BELOW LAKE TANA: At this point it is about 180 yards wide and the water flows at the rate of 500,000 cubic feet per second

For upwards of half-a-century British statesmen and officials working in Egypt and the Sudan have cultivated relations with Ethiopia, not only because of the importance of that country in eastern Africa generally, but also because of the possibility of regulating, in the interests of Egypt and the Sudan, the waters of the Blue Nile from Lake Tana. Postponement after postponement, however, has occurred, primarily owing to the political objections and suspicions of the Ethiopians, who always have been wont to credit the foreigner with the desire for exploitation.

The real problem of the Nile waters is not always understood. The Majestic river, on which Egypt depends exclusively for her existence, is not supplied by tributaries inside the borders of Egypt, and is not so supplied, indeed, for nearly 1,000 miles beyond her borders. The Nile from the Mediterranean to the Sudan frontier is roughly 700 miles. It is 800 miles beyond this frontier before any tributary is seen. This tributary, the Atbara, rises in Ethiopia. Nearly 200 miles higher, the Blue Nile joins the White Nile.

It is near Khartoum that the White Nile, which rises in Uganda and the Belgian Congo, is joined by the Blue Nile. These two rivers give to Egypt and the Sudan more water than is required except during the months March to July. The problem of those responsible for the irrigation of these two countries has therefore been how, when, and where to construct reservoirs on the Upper Nile which should retain the surplus waters of the rainy seasons and the floods. Both before and after the Great War, numerous barrages have been built — at Assuan, Nag Hammadi, and Makwar, for instance (that at Gebel Aulia is due to be finished in 1937)—to control the river which *is* Egypt, in effect, and is largely the Sudan also.

Ten years ago a magnificent feat of British engineering was completed in the Makwar, or Sennar, Dam over the Blue Nile. That dam, however, had not made less desirable the controlling of the Blue Nile nearer to its source, and this can be done only outside the Sudan territory, namely, by Lake Tana. This fact has long been recognised, and various expert commissions have been despatched to investigate the subject. Their first-hand reports show a consensus of opinion that a reservoir at the southern end of Lake Tana is both practicable and desirable. The Blue Nile rises about a hundred miles south of the lake, runs into Tana, and flows out again to the south-east. For 850 miles it runs south, then makes a great sweep to the west, takes a north-westerly direction, and finally joins the White Nile.

Lake Tana is, therefore, the key to the controlling of the Blue Nile, and the making of a claim there is essential. Thus it would, indeed, be a misfortune if the previous objections of the Ethiopians having been overcome, this project were to suffer further postponement owing to international complications. But even were the lake to fall into Italian hands, it is doubtful whether the Rome Government would use it for other than bargaining purposes.

K. W.

On right—THE ESAT FALLS AT DILDI: A scene on the Blue Nile not far from its exit from Lake Tana

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RELIGION, POLITICS
Three Aspects of Li

WHERE A FLOWER GARDEN IS AN EXPENSIVE LUXURY: A view taken last year from the steps of Haile Selassie's new palace, when several hundreds of workmen were engaged in completing the garden in time for the visit to Addis Ababa of the Crown Prince Gustav Adolf of Sweden. The Emperor is a great lover of flowers, but the cost of cultivating them is very heavy, as during the dry season at least two hundred men have to be employed every day to fetch the necessary water from distant springs. Note the steam roller in the foreground

THE CHURCH OF MARY AT DEBRA LEBANOS: An edific Ababa. For centuries the Coptic Church has had time to time there have been frequent clashes o leaders. Even to-day the priests are opposing Hail country, evidently fearing that they may lose the

THE FEAST OF THE EPIPHANY: Haile Selassie (who is dressed in white and is just discernible beneath an umbrella) at a function connected with what is one of the most important and elaborately celebrated of all the Ethiopian religious festivals. According to Mr. Ladislas Farago, author of *Abyssinia on the Eve*, the powerful princes of the Church always take the greatest pains to ensure that the Emperor arrives punctually at a service, and even though it may last many hours, and business may be pressing, His Majesty is invariably expected to stay to the end

ONE OF TWO TYPES OF VILLAGE CHURCH: A provinces of Amhara and Shoa, which differs Tigré. The arrangements within are based wooden pillars supporting a board having

COPTIC RITUAL: A scene beside a stream during the festival of the Epiphany, when the people sprinkle themselves with the waters which have been blessed by the priests. The children in the foreground have just been immersed

HEWN OUT OF THE SOLID ROCK: One of the monolithic the ground-level. These buildings date from the fourteenth Portuguese Missions that were to have such an outstanding

AND PROPAGANDA
in Abyssinia To-day

lmost identical in appearance with the cathedral at Addis
tarked influence on the destinies of Ethiopia and from
natters of policy between the Emperors and the religious
elassie in his scheme for reforming the government of the
ower over the people they have held for so long

"DESPISE THE ENEMY, GUARD YOUR COUNTRY. NOT ONLY THE MEN, BUT THE WOMEN MUST KNOW HOW TO DIE FOR IT": Soldiers parading through the streets of Addis Ababa with a poster designed to encourage the men to join the army, and the women to become members of the Association of Abyssinian Women, the vast organisation which is making arrangements for the establishment and running of hospitals, and will, in the event of hostilities, send a force of first-aid workers to accompany the Emperor's forces in the field

ecular thatche hut of the kind found in the
rom the square or oblong places of worship in
n Jewish tradition, and the altar consists of four
pon it a sacred slab of alabaster or marble

THE WAR MINISTRY AT ADDIS ABABA: Soldiers on guard at the entrance to what is, strangely enough, one of the least imposing of all the Government departments, and which consists of nothing more than a series of small houses and huts. Little work of importance is done here, as the Emperor is himself personally supervising all the arrangements for the defence of his country, and, in fact, fulfils the functions of War Minister to such an extent that the actual holder of the office has, until recently, not found it necessary to live in the Ethiopian capital

urches at Lalibela, which stands in a court 40 ft. below
ntury — about 150 years before the coming of the
fluence on the ecclesiastical architecture of the country

WAR-FEVER: An Abyssinian officer addressing a crowd in the streets of Addis Ababa. There are no daily newspapers in the capital, and it is only by word of mouth that the people hear the latest news of the crisis as it develops

THE MOUNTAIN BARRIERS OF AMHARA PROVINCE: Typical country in the northern Abyssinian highlands which, in the event of war, an Italian attacking force would probably attempt to advance across. Rosita Forbes, the noted traveller, says of this region: "Range upon range the mountains rise and so closely are they heaped together that, even from the air, it is hard to distinguish the valleys crumpled between them. Each cable-shaped pass slung between higher points is a prelude to innumerable other passes"

THE ROYAL CASTLE AT GONDAR: This ancient building, which resembles with certain modifications the medieval fortresses of Europe, was erected at the beginning of the seventeenth century and presented to Socinius I, ruler of the kingdom of Amhara, by the Portuguese adventurers who at that time were trading with the country and were in high favour at the Court. Although the Portuguese were driven out when Fasilidas came to the throne in 1633 their influence remained, and the Abyssinians themselves put up churches and bridges in the architectural style they had been taught by the commercial invaders. Gondar once had 50,000 inhabitants, but to-day has little more than 5,000

LOOKING ACROSS THE RANGES FROM THE 8,000-FT. DANKAZ PLATEAU: Another view of the country near Gondar

ETHIOPIA'S

IT is Abyssinia, not the Abyssinians, which will make war on Italy. Between Mareb, the river boundary of Eritrea and Adowa with its 7,000 or 8,000 inhabitants, there are 21 miles of rocky hills, intersected with sand and thorns. The ordinary mule caravan averages about a mile and a half an hour over such country. But Adowa is child's play compared to what lies beyond.

The mud and thatch huts, with the ruins of Gabra Selesse's gibbe sprawling on a slope, the deserted mission shaped like a tower, the remains of walls and forts demolished by Italian guns, may mean a great deal to Mussolini because, in 1896, General Baratari was there defeated by an army which vastly outnumbered his own. But Adowa to Abyssinia is no more than 100 other villages, inhabited by a comparatively nomadic people who, from time to time, move in search of more water or better pasture.

Beyond Axum, once the capital of Sheba, beyond the first mist-blue peaks and the battlefield that suppressed the Treaty of Uccialli and freed Menelik from foreign dominion, lie the mountains which literally corrugate the northern province. Range upon range they rise, and so closely are they heaped together that, even from the air, it is hard to distinguish the valleys crumpled between them. For something like 800 miles there is no relief from the mountains. Each cable-shaped pass slung between higher points is a prelude to innumerable other passes.

The volcanic construction of the country presents every possible barrier to its penetration. Invariably, the cultivated tracts and the villages are on tablelands or sloping ledges 6,000 ft. to 10,000 ft. above sea level, while the valleys, often 1,000 ft. below it, are rivers in the wet season and chutes of loose stones in the dry. At no time are they more than cracks torn out of the rocks. Pathless and precipitous, haunted by brigands, baboons and, when there is water, by crocodiles, they delay and obstruct the passage of the mule caravans which, for a few thousand years, have been the sole method of transport.

The average pace of a traveller in Northern Abyssinia is five miles a day in "bad country," seven or eight in "good." By "bad" the natives of Tigré, Lasta and Simyen mean the terrible expanses between the Abbai or Blue Nile and the ranges south of Adowa. Here, the land is not mountainous in the ordinary sense of the word. It is cleft into fissures and piled into crags, so that there is no communication at all between inhabited ledges that, as the crow flies, may be scarcely a mile apart.

It is a terrible land, older in its parched greenness than anything I have seen outside the deserts of Northern Australia. Rocks and shrivelled trees look like rags wrung in the mangle of drought, shrunk and discoloured by time. The grass is colourless, the whole country sapless and bleached. The trees, bent and groping towards the earth with a mass of tortured tendons, are covered with thorns. At times, when the sun is low, there is an illusion of snow, but the whiteness is due to the spikes which coat the forest. Each thorn is a definite weapon, an inch or two inches long, with sufficient strength to rip a leather coat. A dagger-sharp branch can drag a man from the saddle, and there are miles and miles of such thorns.

The people of these regions are as bloodless and wrinkled as the rocks which burn the cracked leather of their feet. They clothe themselves scantily in hides and live in caves or shelters scarcely shaped from the earth. Their faces, hair and eyes have a curiously leaden look by reason of the dust in which they are caked.

Even in the "good" country, where caravans cover a couple of hundred miles in a month, the muleteers have to choose whether they will camp beside the rivers in the torrid heat of the canyons where there is no fodder and a horde of venomous insects, or on the highlands where there is grass, but rarely water. Some of the mountain Abyssinians boast that they've never drunk water in their lives.

In the wet season there is plenty of water in the rivers and a little in mud-holes on the plateaux. At the same time there are storms which have the violence of cloudbursts. Night after night, in late February and March, my tents were flattened beneath a volume of water. If the camp had been pitched in a hollow, it was submerged. If it were on a slope, everything was washed away by a miniature cataract.

Insects abounded. It was impossible to escape the voracity of mosquitoes, but I remember making an arrangement with a guide that he should kill anything over 3 ins. in length, with the result

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Blustery Burnham

Rough Weather During the Annual Regatta on the River Crouch

LEADING THE FIELD: Mr. Stephen Herring's *Lora* well ahead of her rivals when winning the race for the "C" Class handicap boats (four to eight tons) on the first day of the popular end-of-the-season regatta held on the River Crouch and organised by the Royal Burnham Yacht Club. Burnham Week is the chief fixture of the year for small classes on the Thames and East Coast, and, as usual, there was a large number of starters in all the events although weather conditions were by no means ideal

ONE OF MANY MISHAPS: Mr. W. Molin's *Blue Peter* returning home with her mast broken, an accident which befell her when competing in the Burnham Town Cup. On account of the adverse weather conditions several craft were dismasted, a number of others went aground, and there were one or two cases of split mainsails. Fortunately there were no personal injuries

Cromer's Lifeboats

The Launch of the "H. F. Bailey"—One of Two New Craft

PERSONALITIES AT BEMBRIDGE: Mr. Roger Cockburn, Miss Somerset, and Mr. Colin Cockburn seen together at the regatta for the International and Solent Classes

On right—THE BIG SPLASH AT THE BOTTOM OF THE SLIPWAY: The *H. F. Bailey*, one of Cromer's two new lifeboats, taking the water when she was launched recently in the presence of a large crowd of holiday-makers. The boat is so designed that even if her engine room is flooded during a storm her speed remains almost unaffected

Charles II, Pepys, and the Navy

How the Recently Discovered Journals of the Great Diarist Reveal the More Serious Side of the "Merry Monarch's" Character

By ARTHUR BRYANT

EVERY Englishman is proud of his country's Navy, and honours her great traditions. And almost every Englishman has heard of Charles II and Samuel Pepys and their many loves. Yet so strangely has our history been written that probably very few realise that the greatest and most enduring love both of Charles and Pepys was the English Navy.

It is a curious and ironical circumstance that the secret shorthand diary that Pepys kept in his youth should have popularised a mass of second-hand gossip about his Sovereign, while the journals and memoranda of his later life which he meant to be public, and which are full of first-hand testimony to Charles's ability and care for the Navy, should have remained unknown and unconsulted. Every reader of the Diary is familiar with the King who was seen coming out of his mistress's apartments in the early morning, who hated the very sound and sight of business, who was chasing a moth when the Dutch guns boomed over the Medway. Some of this was true. Yet much of it was the merest third-hand gossip, contradicted like the moth-and-the-Medway fable by first-hand evidence from contemporary letters as to the King's exact activities. Nor is what Sam Pepys, a young Navy Office official with a penchant for scandal, living and working near Tower Hill, heard from the wife of the Court surgeon, who had heard it herself from the maid of a lady of the bedchamber, very satisfactory evidence of the private doings of the King at Whitehall.

Yet what Samuel Pepys, Secretary to the Office of Lord High Admiral of England, wrote in his considered moments about the doings of the sovereign, who was his naval and departmental chief, is very good evidence indeed. The Muse of English History, capricious jade, has chosen to honour the bad testimony and ignore the good. One of Pepys' contemporaries was strangely right when he said that the lies of his age would be the history of the next.

The neglect of Pepys' more serious documents is not very difficult to explain. That the shorthand diary, alone of all his many manuscripts, was selected for transcription and publication in the early nineteenth century, was the natural result of the great success of Evelyn's diary published a few years before. Its literary merits did the rest; it is, after all, one of the supremely readable works in the world. That, though of the highest possible value for part of Pepys' own life, it was not always at all reliable testimony for those of others; that it dealt a great deal with his pleasures and comparatively little with his serious work; that it covered less than ten youthful years, and these by far the least important of his official life, were overlooked. For most readers, the wonderful self-portrait of the little, vital, gossiping man and his world as he saw it was enough.

Yet there were a few *cognoscenti* who regretted that the diary should have stopped at the very moment when Pepys was first beginning to become a person of national importance, and to associate, not at a shadowy distance, but on the closest possible official terms with the King and the greatest men of the nation. Four years after he closed his diary he was promoted to the key-post of Secretary to the Office of Lord High Admiral of England, and became, for all virtual purposes, the permanent administrative head of the English Navy. Here he was in a position both to show what he himself was made of and to form first-hand opinions of the capacity and services of his sovereign.

The curious thing is that the evidence for this, the most important period of Pepys' life, has always been available, though in a far less attractive form than in the great diary. Preserved in perfect order just as he left them in his own library at Magdalene College, Cambridge, and in baffling disarray after their many vicissitudes in the Bodleian Library at Oxford, are the materials which Pepys prepared and accumulated to justify his career and make clear the history of his times. Their very extent defeated his object. Posterity, confronted by such a vast mass of "dry-as-dust," fought shy and left what Pepys wanted to tell it to oblivion. After all the Diary alone ran to over a million and a quarter words, and this seemed as much as anyone could want to know about the life of a man, however attractive, who died more than two centuries ago.

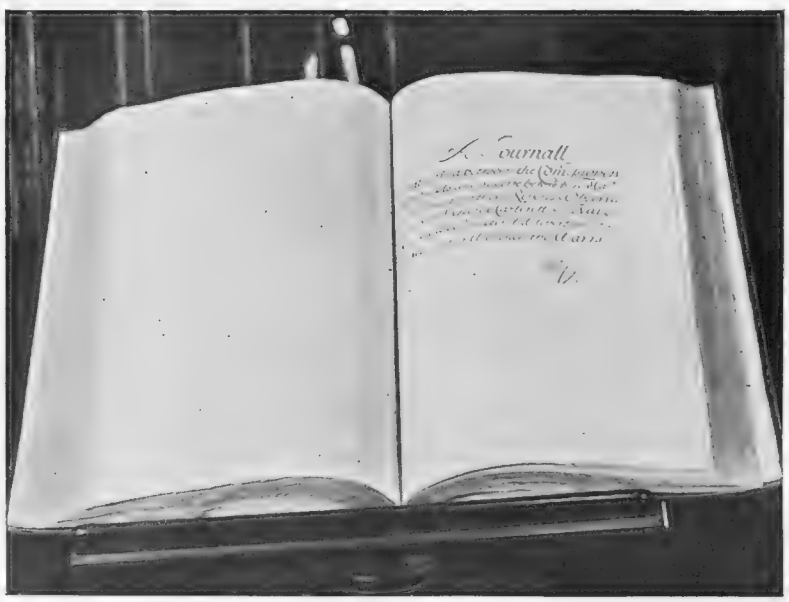
Yet the most important part of a man's life is his work, and the more the legend of the gossiping philanderer and buffoon erected by the Diary grew, the more did Pepys' neglected work clamour for recognition. The stern old face of the great Secretary, as it looked down from the walls of his former College and from those of the Admiralty, demanded to be understood.

Slowly, and in the face of persistent opposition, the story of Pepys' life work, which was the creation of the English naval machine, began to be discovered and told. One brilliant scholar, Dr. J. R. Tanner of Cambridge, spent many years transcribing and calendaring the letters and naval documents preserved in the Pepys Library at Magdalene College, Cambridge, and at the home of the Pepys-Cockerells, the representatives of the diarist. Others followed suit. Yet when Dr. Tanner died a few years ago, though the work of re-educating the reading public in Pepysian lore and the history of the Restoration Navy had definitely begun, the greater part of Pepys' papers at Cambridge, and even more at Oxford, had still to be made public. None the less, thanks to Dr. Tanner's brilliant pioneering, it was only a question of time.

To-day we are in a position to survey the full field of Pepysian material. The naval letters, numbering tens of thousands, include fifteen large folio volumes of Pepys' Admiralty correspondence, of which about half was calendared by Dr. Tanner before his death. In addition to the great diary, there are preserved at Cambridge a number of other journals which Samuel kept in his later years, comprising an official diary for the opening months of 1670, another for February and March 1680, and journals of his services to Christ's Hospital of his relations with the law during his persecution in the years of the Popish Plot and of the work of the Special Commission for repairing the Fleet which he set up in 1686. Here too are his Admiralty Journal and his Naval Minutes published by Dr. Tanner and the more extensive Miscellany volumes and collections of naval papers still to be given to the world. The material at Oxford is even vaster.

From a bust by Honore Pelle

MALIGNED BY THE HISTORIAN: Charles II who has been indicted so often for his moral failings but seldom given sufficient credit for his statesmanlike qualities



A PRECIOUS AUTOGRAPH: The title-page, bearing the diarist's signature, of one of the two manuscript journals of Samuel Pepys which were brought to light a short while ago by Mr. Arthur Bryant in the Pepys Library at Magdalene College, Cambridge. The journals are written in longhand and besides containing much interesting information relating to the Privy Council's enquiry into the affairs of the Navy Office in the winter of 1669–70, they also show King Charles's tremendous interest in the building up of a powerful navy

From it emerge two facts, clear and indisputable. That Samuel Pepys created for the first time an English Navy strong enough to maintain a permanent ascendancy in the seas of the world and that the task of doing so was made possible by the foresight and naval knowledge of the last two Stuart Kings. Before that time there had been brief periods when the emergence of a great naval genius like Drake or Blake had given England a temporary though glorious advantage over its maritime neighbours, but for the most part the English "Sovereignty of the Seas" had been, as Pepys showed clearly in his historical notes, an idle and academic boast. When Pepys first became associated with the Navy in 1660 the line of battle consisted of thirty ships of a total burden of approximately 25,000 tons and carrying 1,730 guns. When he laid down his office after the Revolution of 1688 he left behind him a line of battle of fifty-nine ships of a total burden of 66,000 tons and carrying 4,492 guns. Nor had he only doubled the Navy's fighting strength. He had given it what it had never possessed before and what it has never since his time lost—a great administrative tradition of order, discipline and service. The great captains who led our fleets to victory at La Hogue, Quiberon and St. Lucia, Camperdown, St. Vincent and Trafalgar were in a sense standing on Pepys' shoulders.

"To your praises, Sir, the whole ocean bears witness," wrote the Orator of the University of Oxford in Pepys' closing years. "You have truly encompassed Britain with wooden walls." It was true, for the great ship-building campaign of 1675–1677 which gave England a battle fleet of thirty brand new ships superior to any in the world was of his conception and waging. Yet, as his own papers show, the very superiority of that fleet was in a large measure due to Charles II, who when Pepys had persuaded the reluctant Commons to vote the money for its building insisted that the dimensions of each of the three rates which the politicians had limited to 900, 1,100 and 1,400 tons respectively should be increased, at his own expense, to a size which should give them an unchallengeable ascendancy over their French and Dutch rivals. As a result the new third-rates were all over 1,000 tons burden, the second-rates over 1,400, and the first-rate, the *Britannia*, had a burden of 1,739 tons and carried 100 guns. "How," Pepys himself wrote, "can King Charles II be supposed an enemy to his navy that out of his own purse enlarged the dimensions assigned by the Parliament itself to the 30 new ships, by virtue whereof they became of so great consideration for the strength of England as they are now found in our war with France, 1693? To which many more considerations might, I doubt not, be added to the honour of that Prince and his brother out of the history of those ships for the extinguishing of that scandal."

The details of them are to be found among Pepys' own papers.

MATTERS MECHANICAL

Night Ploughing in the Hopfields of Kent—France's Mechanised Army on Manœuvres

THE "GYROTILLER": This colossal machine is used for ploughing in the Kentish hopfields where it can turn over the ground at the rate of twenty-six acres in twenty-four hours. It is provided with powerful lights for operating at night, and the patent rotary knives are adjusted to penetrate the earth to depths down to two feet. The machine weighs 15½ tons, it has a 170-h.p. engine, and its total cost was £6,000. *On right*—Young Viscount Forbes, who is to drive a new supercharged outboard motor-boat in the International races which are to be held in Venice, watching his mechanic tuning up the engine in preparation for a trial run in Poole harbour

AN ANTI-TANK CANNON TOWED BY A WHIPPET TANK during the French Army's autumn manœuvres which have been taking place between Mourmelon and Rethél, North-Eastern France, and in which two mechanised divisions of infantry and one of mechanised cavalry were engaged. The exercises were watched by Marshal Badoglio, Chief of the Italian General Staff, who only a few days before had been supervising the great concentration of 200,000 of his own forces near the Brenner Pass

ENGINES OF WAR IN THE ORIENT AND OCCIDENT: *Left*—A tank being put through its paces on the parade ground at Narashino, near Tokyo, the headquarters of the First Tank Company. *Right*—An armoured car with caterpillar wheels going into action during the recent autumn manœuvres in France. Note the roller attachment in front of the radiator, which evidently assists the car when crossing difficult terrain, and the battery of guns in the turret

REMINDERS OF THE DAYS OF IMPERIAL GLORY: The four marble maps in the new Via dell' Impero in Rome which have recently been placed there to show citizens how the Empire developed between the years 700 B.C. and 117 A.D. and to stimulate them to take an even greater pride in the history of their country. This picture, together with the others on this page, was taken by Donald McLish, who has been touring Italy on behalf of "The Sphere"

THE LEAGUE'S

The "Have-Gots" Meet the "Have-Nots" at Geneva, where the Redressing of Grievances Has Become the Chief Aim of Representatives of the Nations

By FERDINAND TUOHY

THIS is written on the way to Geneva, where nothing positive over Abyssinia has yet occurred. Presently I shall arrive at the League to find the familiar September setting, only more taut and tense. The same "think stuff" will be going out each night over the Press wires; the same rumours, propaganda, official denials; conjecture will be king in the corridors, as always; the Paris Press will attribute every perfidy to les Anglais, but it will lose in the end, also as always; the Germans will be beating the big colonial drum and intriguing; Radek's brigade will be pussyfooting and subtly setting "capitalistic" colleagues at loggerheads; the Americans will look objectively on all these wretched squabbling Europeans (forgetful that the Ethiopian oil concession was registered in Delaware). Among the delegations the same jockeying and manœuvring, bluffing, and "holding out on," the same launching of trial balloons and staving off of the essential; the same tight-rope walking by ourselves and the French, only more so; the same luncheons and teas of attempted conciliation and compromise, of eternal seeking after a formula and search for common ground; the Palazzo Venezia reverberating through it all—through this year's Garden of Eden by Lac Léman.

Only, this time it will be different. In the back of everybody's mind will be the thought that the "Have-Nots" are at last coming up with the "Have-Gots," and that unless the League is able to rise to the latest and greatest occasion offered it by the circumstance, it fades away, and better so.

Reflect a moment. Have we not steadily fallen into the error of visualising the League first, last and all the time as an organism for the prevention—the suppression—of war? Yet was not the League also conceived with a view to putting something in the place of war? In the years following the Armistice, indubitably the prevention of war was of much greater importance than the redressal of grievances, but that period is definitely over—has long been so. The turning-point now in League history that we have come to is simply this: the League must be used infinitely more than in the past, if not primarily, as a political organisation competent to secure justice and fair treatment, competent, in other words, to pursue and implement a realistic policy of *give;* for that is, of course, the real prevention of war, not policing and sanctions or even disarmament. Far more important than disarmament, yet awhile, is to get down to brass-tacks and try and see how Mussolini and Hitler can be met

ROME'S DOMAINS IN THE SECOND CENTURY: One of the new marble maps in the Via dell' Impero illustrating the extent of the Empire in the reign of Trajan, the ruler whose character, military talents, and administrative ability combined to bring Rome to the height of her power

in regard to giving each more of the sun. Whereupon a digression—

Forewarned is forearmed.

No doubt but that Britain intends to pay closest attention henceforth to the physical side of matters; in that sense she will presently and subsequently be forearmed. But how about the forewarning? Is that going to be any better? And, had it been better in the past, would it have been necessary for us to arm now as we have to do? Important questioning.

"For our part," latterly editorialised the *News Chronicle* under the style "The Future of Africa," "we claim credit for having taken the lead in recognising that to deny to the 'Have-Nots' among the nations room for colonial settlement and access to markets means inevitable war."

Well, no harm in claiming, so long as you stick to the job in hand. Never mind if most of it was sifted in THE SPHERE in 1931–32–33 under such titles as "Africa Calling," "Italy's War Neurosis," "Shall Germany Have Colonies Again?" "Dictator's Demand Babies," "Italy's African Dream," "The Fascist Hand on Tunis," "Mortal Sin in Malta," and so on and so forth. Particularly, was attention drawn to the inescapable new situation for this country that in the very nature of things must arise with the drift of Mussolinian policy.

Our newspapers have indeed awakened to bed-rock, where until now but one or two reviews were exploring. In one degree or another they are all now concentrated on "giving" (though they may not call it such). They would have seen much of that, too, long ago in these pages; articles in the course of which the extreme difficulty of giving was examined, and the necessity of preparing to give ("*savoir donner,*" "to know how to give") advocated. However, behold the belated submission to sound sense. *The Times* admitting that something fresh requires to be done with the spoils of Empire; Mr. Lansbury, of *The Herald*, urging a

re-sharing of the world's raw materials; Lord Rothermere going the whole hog, as usual, and demanding that we return to Germany her former colonies; even *The Morning Post*, as if stirring from a trance, seeing "the whole issue in a new light," i.e., Mussolini dreaming of rebuilding the Roman Empire on the road to India. Ye gods and petits poissons! One had only to wander about the Eastern Mediterranean three or four years ago completely to realise such things.

THE DUCE'S RESIDENCE: The Palazzo Venezia, the massive crenellated edifice in the Florentine early-Renaissance style which was begun in 1466 and partly built with stones removed from the Colosseum

Others have been remiss besides the Press, in its lack of vision or its disinclination to face up to things until these hit one straight in the eye as they now have done. This country is widely reputed to possess the most remarkable intelligence service of modern times: not the Pope of Rome is more omnipotent, if we are to credit foreign assessors. Knowing a little about this branch, I refuse to believe that Whitehall was not regularly and accurately kept abreast of the true inwardness of

CHANGED OBJECTIVE

Mussolini's intentions in the Mediterranean and elsewhere, together with the likely progressive stages of his policy and action. We may take it for granted that Whitehall *was* so informed. Then why, year after year, was nothing done about it? Why was the vital reading of future events as good as kept stuffed away in pigeon-holes? Why did we not anticipate things, go forward to meet them, take time by the forelock, the bull by the horns, why were we allowed to slide into the present impasse of "giving" when the giving is no longer by any means good but by every token scheduled to be executed under pressure, and vastly more difficult on that account? Why had we to wait until this transcending problem of giving came to be presented in a passionate war atmosphere? Public opinion was not ripe for such a radical considering? Then why not have ripened it?

The truth is we utterly failed to profit by Pascal's saying.

Strange how the 1919 peacemakers wrote useful and intelligent things into the Covenant, which we have never deigned to make use of. This "Have-Not" agitation offers a case in point. Turn to Article XIX. It read as follows: "The Assembly may from time to time advise the reconsideration by members of the League of treaties which have become applicable and the consideration of international conditions whose continuance might endanger the peace of the world."

What more does one want than the last dozen words to justify the raising of this whole question of "have-notism"? Undeniable that both Mussolini's and Hitler's armed craving for colonies constitutes a peril to peace. Indeed, it is here that we have been in the wrong and Mussolini in the right. More than once he has made known his view that the latter part of Article XIX should be introduced into the council chamber. Heretofore the French have jibbed lest the sanctity of treaties figuring in the first half should be compromised, but our neighbours are now so engaged in transalpine embracing that they can hardly object.

It is unfair, and will eventually prove fatal if persisted in, to use just such parts of the Covenant as favour one's own case while rejecting other parts that may mean your having to yield something. Clearly, the main problem of the times directly ahead, will be whether we can find a substitute for war, whether we can evolve a system whereby modifications in the economic and political structure of the international order can be brought about in a peaceful manner. Force being the ultima ratio of nations failing to secure redress of grievances in any other way, if we cannot do this, then it is war in our time, as certain as the sun rises.

We may have left it until too late, as it is; inasmuch as no policy of "give" would find sanction with those most closely concerned unless it were accompanied by the guarantee of an end of armed pressure by the beneficiaries, Italy and Germany, and can that be hoped for at this late hour? Yet it is surely a hundred times worth trying as the one means of revivifying the League, which had otherwise better pack up, for this generation at any rate, as being incapable either of stopping war or of remedying grievances. All the machinery for "giving," under this style or the other, mandatory or concessionary, lies ready to hand; only the will of man is needed to set things in motion; in the present crisis, mainly the wills of France and Britain, acting together. There are other "Have-Gots" strewn round the earth. Some day North and South America, Australasia and Asia, may—will—be required to play their part in the re-apportioning of the world's raw materials, as in the rendering of white settling territories more accessible, but for the present it is Africa that commands attention, as the one continent holding possibilities of calming immediate Fascist and Nazi desires.

In the not too far distance, the U.S.S.R. appears in Hitlerian eyes as most decidedly a "Have-Got." In every other way, if not territorially, the United States ranks high in like category. Territorially, one or two of the dominions are clear "Have-Gots." Both Belgium and Portugal—particularly the latter—have African possessions of freak size apt to put them in the "Have-Got" list; possessions, moreover, which could be considered from a new angle in the grave crisis of to-day, notably Angola.

It is not as if immense tracts of territory were to be made over to Germans or Italians. The German colonies on the eve of war, all of them, absorbed just over 30,000 white Germans, while far from their improving the imperial finances, they meant a deficit of £5,000,000 in 1913. The Nazis claim that they can alter all that now; well and good, that would be their affair. Similarly, I am writing this in the fervent hope that some form of common ground may be found with Mussolini, enabling his Italy to draw on the resources of Ethiopia. "Giving" in Africa need not be such a fearfully complicated affair. Tricky, yes. That is another story. If only Mussolini and Hitler could be trusted, which unfortunately neither one nor the other can be! Accordingly, the safeguards that the "Have-Gots" must needs think out can be no trivial ones. There is an old French proverb, "*l'apétit vient en mangeant*," that has to be kept firmly in mind. An endowed dictator might clamour for more, using threats. Naturally, the opening safeguard would be that any giving or re-sharing, or whatever one likes to call it, could only be carried out through the League, backed by the collective system. But other, physical, safeguards along the way would also be imperative. Incidentally, if Germany will be out of the League next month, if anything might be calculated to entice her re-entry, it should be the prospect of some form of return to Africa by the Third Realm.

Why hide a closing fear, namely, that Paris (I did not say "the French") will refuse to "march" in this whole-giving business? Ever since Versailles, Paris has had to be dragged along where any concession was involved, and usually the dragging has lasted so long that the concession, when given, has lost most of its value. There is, alas, every sign that any suggestion that France should cast a fresh glance upon some of her superfluous and neglected African territory would be met with an indignant refusal, as if the mere suggestion were an unheard-of impertinence and insult.

"Let the Germans know that never will France allow a grain of sand of her African possessions to be touched!" declaims *l'Ordre*, and that is the kind of French helpfulness we may expect in other quarters. "We love, we worship peace, but if it's a question of giving anything to ensure it—ask somewhere else!" Thus, Paris, now as always.

Yet never in the history of overseas settling can there have been a more blatant instance of territories being superfluous to the mother country than in the case of French North Africa, or parts of it. As outlined in a recent article Tunisia, Algeria and Morocco are seething with bitterness and unrest because France, having herself no need for their products after having developed these out of all reason, puts obstacles in the way of export to foreign countries, with the result that these rich and temperate lands are considerably going waste.

Give the new *ami-de-cœur*, Mussolini, concessions in Tunis where are 100,000 Italians to 60,000 French? *Not likely! Que Messieurs les Anglais donnent, s'ils veulent!* So helpful, our neighbours, so really helpful. And foreseeing.

On right—SOLDIERS OF TO-MORROW: A company of young Fascists parading with their instructors at the base of the Mussolini monument, a giant column made from one block of Carrara marble

IN THE ORNAMENTAL GARDENS OF THE MUSSOLINI FORUM: Ballina (young Fascists) standing beside a marble sphere which looks particularly striking at night when it is floodlit and fountain jets are playing on its surface

THE NEW ROAD THROUGH THE HEART OF ROME: The spacious Via dell' Impero, which runs from the Vittorio Emmanuele monument to the Colosseum. A mass of small buildings had to be removed to make way for this imposing highway which is marked off with a special track for slow traffic and cyclists. Motorists will note with interest how pedestrians are occupying the road. In the background on the right is the Dictator's residence

THE MUTILATED MADONNA: As a rule no damaged statue is allowed to be venerated by Roman Catholics, but an exception has been made in the case of this figure in the English College at Valladolid which was knocked about by the troops of the Earl of Essex when they sacked Cadiz in the year 1596

A Modern Rambler in Spain

Impressions of a Two-Thousand-Mile Tour of the Peninsula

By CHARLES GRAVES

STILL half-dazed but wholly enchanted after my 2,000-mile tour of northern and central Spain, I can nevertheless immediately recall half-a-dozen real peak points. If I were the compiler of the *Michelin Guide* I would give four stars to Santiago, three to the villages round Astorga, three to the ex-king's palace at Madrid, two to Santillana, and three to the English college at Valladolid. I would also give two stars to the Castle of Simanca.

It astonishes me that the Patronato, of which I wrote last week, has made no effort either to emphasise or to floodlight the unique city of Santiago. It has been known for centuries as the Rome of the West. It is a tiny Venice with paved alleyways instead of canals. By moonlight it is a magic city. You walk up the Street of the Orphans and only your own footfalls can be heard at midnight. In the cathedral there is the most entertaining religious statue I have ever seen. It is that of Daniel, who is standing beside Job. Job looks as gloomy as tradition suggests. Daniel has a most entrancing smile. If ever a stone figure was saying "I told you I could get away with it," it is that statue of Daniel, after he has emerged from the lions' den.

JOB AND DANIEL: Two interesting statues in the Cathedral at Santiago de Compostela, showing the former with his traditionally gloomy expression, and the latter with an entrancing smile

Santillana is a village of only 500 inhabitants. Once upon a time it was the capital of the whole northern area with a kind of senate of nobles who met there regularly. For convenience sake they all built themselves magnificent houses in stone; but with only one or two exceptions their descendants have abandoned them and they are now inhabited by the local peasants. Every house has magnificent coats of arms on the front, though in many cases the ground floors are occupied by cattle. It has survived civilisation almost entirely, because the original cobbles remain; and what cobbles they are—they would almost defeat a tank. The peasants live exactly as they did in the 15th century, with 15th century smells and 15th century conveyances.

One of the greatest charms of Santillana is the local guide-book, which at one point says: "I do not know what austere grandeur permits those two declivous, uneven streets. They resemble highways where troops of enemies went forth to the field of battle, returning at call of the truce their wrath unappeased, latent, rancorous and violent; roads over which ancient warriors hung upfluttering in the wind their standards and bucklers in heraldic order." The same guide-book concludes thus: "The proceding descriptions, done at one stroke of the pen, are the most notable and widely appreciated of the ever-curious and invireible town."

One of the reasons for Santillana becoming more and more a tourist centre is the fact that Gil Blas was supposed to have lived there as a child. More interesting are the Caves of Alta Mira, a mile or two away, where they discovered (not long ago) those famous prehistoric drawings — still in their original red and black—of bison, buffaloes, wild boar, reindeer, and the most incongruous-looking pony you ever saw in your life. The rest of the Caves are nothing like as good as those in Majorca or even the Cheddar Gorge, but the prehistoric drawings are certainly first class.

HARVEST-TIME NEAR ASTORGA: Peasants gathering their corn crop, which they thresh by hand. These people, who are direct descendants of the Berber highlanders that came into Spain with Tarik and Musa, wear a characteristic and picturesque costume that indicates their African origin. The carrying trade of north-west Spain is almost entirely in their hands, and trains of their mules magnificent beasts, rivalling those of Galicia—are frequently to be met with both on the high roads and the mountain tracks

The King's Palace in Madrid is guarded by the Foreign Legion—the best troops in Spain. The President uses part of the edifice as his offices, and yet, to give you an idea how royalist are the sympathies of those literally close to the heads of the Republican Government, I may say that I was peremptorily told to remove my hat when I was in the royal apartments, though they are now used purely as a museum.

Here you are shown the room in which the Queen and her children spent their last night in Spain before being hurried off by a train across the frontier. You see the royal banqueting room, which is still very occasionally used, and the throne room itself, with the two thrones in position. One has a curious feeling that it will not be ever thus, and that once more the Palace will be a royal residence, but it is not for me to be a political prophet.

It was quite by chance that I discovered the English College at Valladolid. I was very glad to do so, for the rector—an Englishman—showed me round. Apparently there are fifty English theological students there together with a couple of dozen professors. Though it is built in the Spanish style of three or four hundred years ago, it somehow has an English atmosphere. The Spanish gardeners are made to grow cabbages, parsnips, turnips and other English vegetables on the college's own farm, and as far as is possible an entirely English life is led.

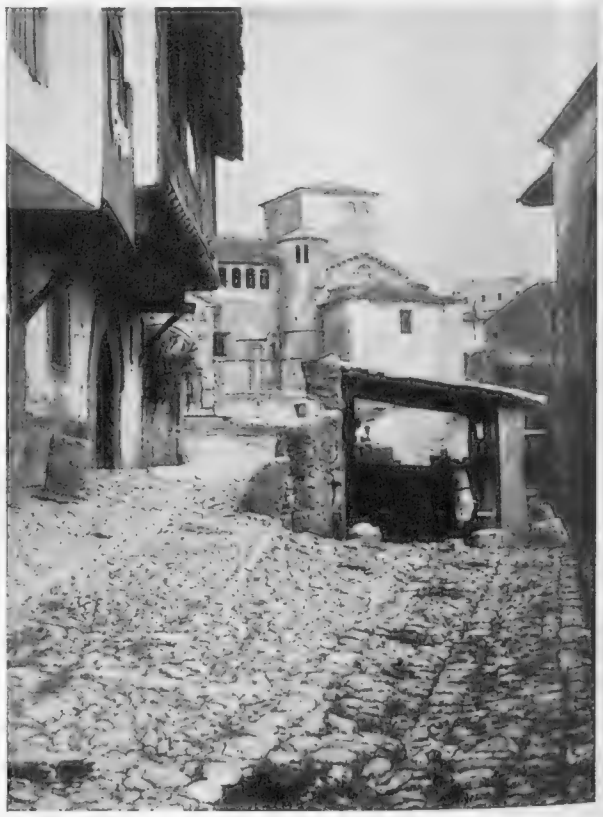
On the walls are the most gruesome portraits of former students who were hung, drawn and quartered in England at the time of the Reformation, but the most interesting treasure of all is the only religious statue which, though mutilated, is allowed by the Pope to be venerated. This is a statue of the Madonna which was knocked about by the troops of the Earl of Essex when they sacked Cadiz hundreds of years ago. Some old woman found it lying on its side in the market place. She took it back to her house and later on had it forwarded to the college when they learnt about it. The accompanying photograph is the only one that has ever been taken of it.

Another treasure of the college is one of the earliest Histories of the World printed in the fifteenth century. It is very practical. The first illustration shows a large circle, the next shows the same circle with a few smaller ones in it, then you see a few stars, and so on, until Adam and Eve appear several pages later.

The villages round Astorga are fascinating because the descendants of the original Berbers, who arrived in Spain in the eighth century, still live there practically as their ancestors did. The old men still wear their skull caps and voluminous trousers, the corn is threshed and winnowed by hand, and if you pass through that area in late August or the beginning of September, as I did, you see miles of completely Biblical scenes. These villagers have the most magnificent mules you ever saw in your life. Some of them look big enough to go round the Grand National. They are as glossy as satin.

Finally there is the Castle of Simanca where all the archives of Spain from earliest days down to this minute are kept. The castle is complete with moat and drawbridge and everything else as it was in the fifteenth century. It is odd to hear the click of the typewriter inside. Here you can see the marriage certificates of all the Kings and Queens of Spain as well as some of the earliest religious propaganda—pictures of the Protestant kings of Denmark and England standing by with a

(*Continued on p.* 400)



THE COBBLED STREETS OF SANTILLANA: A town, unheeded by the march of progress, where the peasants live a life that differs but little from that of their fifteenth or sixteenth-century ancestors. Santillana is famous in fiction as the birthplace of Gil Blas, and in fact as the birthplace of Juan de Herrera, the architect of the Escurial

In the Mystery Mountains of New Guinea

Where Mr. J. G. Hides, an Assistant Magistrate, has discovered a hitherto Unknown Tribe living in a Wonderfully Fertile Valley

Specially drawn for "The Sphere" by D. Macpherson

A PAPUAN WONDERLAND: A diagrammatic drawing showing the route taken by Mr. J. G. Hides and his party when they penetrated recently the uncharted mountains of Eastern New Guinea and found, walled-off from the world by 7,000-ft.-high limestone cliffs, an intensively cultivated valley with no villages, but well-built dwellings inhabited by the Tari Furora—a strange light-skinned race of short stature, possessing high cheek bones, finely moulded features, and mops of fuzzy hair. The party started its journey up the Fly River in January of this year, and during the subsequent dash inland suffered appalling hardships, having to traverse turbulent streams, face the arrows of savages, and keep alive on a minimum of food in a land of plenty on account of the lack of hospitality of the natives

STILL LIVING IN THE STONE AGE: A native of the Papuan hinterland who, in the smallness of his stature, is akin to the new race discovered by Mr. Hides. His stone axe is a much handier instrument than it appears to be

IN A COUNTRY OF MYSTERY AND ENCHANTMENT: *Left*—Typical scenery in New Guinea where giant snow-clad ranges tower above thousands of square miles of dense jungle which in many cases can only be penetrated along the waterways. *Right*—Suki warriors on the Fly River up which Mr. Hides and his party started their adventurous and hazardous journey into the unknown interior. The official account of the expedition's experiences has just been published in Australia

VULNERABLE: Frynne Rodney (Lilian Braithwaite, *right*), who has rashly decided to open a bridge club without knowing anything of the game, has mistaken an angry creditor (Frank Cochrane) for a bridge instructor and forces him to give her a lesson, at the same time roping in her maid (Maidie Andrews) and her footman (Stuart Kern) to make up the four. An amusing scene from *Full House*, Ivor Novello's latest comedy which, in spite of a mixed reception by the Press, has been drawing big audiences to the Haymarket Theatre

Current Drama

"Accent on Youth" Deserves a Long and Profitable Run: Happy-go-Lucky Entertainment at the Vaudeville

By PHILIP PAGE

IF England were as theatre-minded as one might wish it to be, I would venture to foretell a long and profitable run at the Globe Theatre for *Accent on Youth*. That may still be the play's fortunate fate, since New York, which has even stronger counter-attractions, took to it in no uncertain fashion.

Yet I still doubt whether people generally are deeply interested in plays about the theatre and theatrical people. Recently we had a clever and brilliantly acted story of the Barrymore family. That did not make a fortune for anybody, not because the Barrymores are an American family, known to the majority of Londoners only through the films, but because back-stage affairs intrigue only a limited public. Indeed, with the exception of *Trelawney of the Wells* and *Pagliacci*, I can think of no treatment of such topics that has achieved the tiniest niche in the structure of fame. At this very theatre, I remember, was produced one of the most amusing pieces I ever saw—*The Show Shop*. It failed because it was about shows and full of "shop."

If an actor's life, which is popularly supposed to have some sort of glamour about it, is at least a dubious stage subject, what can be said of a dramatist's life? I am not suggesting that the dramatising of the life of Mr. Coward or of Mr. Lonsdale or of Mr. Shaw might not be enthralling, though there have been plays in plenty about Mr. Shakespeare which were not. But what of an imaginary dramatist, Stephen Gaye, round whose rather dull personality Mr. Samson Raphaelson makes *Accent on Youth* revolve?

We see a prospective cast reading one of Mr. Gaye's plays as the curtain rises. We have to take its merit for granted, since for an unconscionable time Miss Mary Grey and others do nothing but read, while Miss Creer Garson, the dramatist's secretary, sits at a desk obviously very busy at work which cannot possibly concern an expectant audience.

I am mightily tired of plays which begin with a long long pause and continue, as this one does, with long long pauses—*e.g.*, a butler pulling curtains, patting cushions, turning lights on and off, and rearranging magazines. This is usually described as "careful production." To my mind such silent, boring, and wholly extraneous episodes are the very reverse, and are a sign of bad production. In the spacious and more leisured days of Alexander at the St. James's, they might have built up "atmosphere." In a world used to the slickness of the films, there is no place in a play for even thirty seconds which have no bearing on its meaning or on its subsequent development.

At long last it is realised that Stephen's play is about an elderly man who is in love with a young girl. When Stephen (fiftyish) enters, arranges to go to Finland with a blonde actress, and dismisses his secretary, who is very young indeed and who takes that opportunity of telling him that she adores him, we further gather that the plot of his play is going to be reproduced in the dramatist's own life. Stephen, who at this moment seems to have the blood of a cod-fish in his veins and to be a bit of a cad as well, promptly turns the situation to professional use and actually dictates to the typist her own confession for subsequent embodiment in one of his scenes. From that point it is clear that the end of the last act will see the pair securely in love with each other, and, with happy memories of *Vintage Wine*, I prepared myself for the inevitable. The intervening period was occupied with the typist's sudden passion for an adoring young actor (Stephen, Cyrano-fashion, showing him how to win her), their inexplicable marriage, and her return to Stephen.

Mr. Raphaelson has a neat touch, and his play moves with the precision of a well-oiled machine. But the machine needs a bit more steam: the first performance was dreadfully slow. And I fear that, with all its considerable qualities, *Accent on Youth* has not sufficient intrinsic interest to balance the drawback of so "shoppy" a theme.

Mr. Nicholas Hannen did his best for Stephen, and it was a good best. He was easy and polished, and as sincere as it was humanly possible to be in a play essentially insincere. For the episode in which he sat at a piano and played five-finger exercises with exasperating pertinacity and at intolerable length he was not, of course, personally responsible.

The typist was in the vastly competent hands of Miss Greer Garson; Miss Mary Glynne played her scene charmingly and cleverly, disappearing all too soon; and that admirable actor, Mr. Archibald Batty, exploited to the full the familiar humours of a butler that only the stage could know—and has known far too long.

FALSE PRETENCES: Archie Leadenhall, the long-suffering husband (John Williams), finds that his supposedly invalid wife, Lola (Isabel Jeans), has a very hearty appetite indeed. Another episode from Ivor Novello's *Full House*

"Stop - Go!" — *Stop-Go!* is a typical Charlot revue at the Vaudeville—and that is intended as high praise, as, in fact, it is. Here is a happy-go-lucky entertainment, if ever there was one. Perhaps the authors are not always lucky in scoring a bull's-eye with their sketches; but for at least seven-eighths of the time the audience is happy.

I would suggest the deletion of an "advertisements" sketch, in which personal testimonials are given from the stage in rather too photographic a fashion, though even this was redeemed by a young lady in a bathing-dress (I cannot trace her name, for which I am sorry since she obviously has the stuff of a brilliant little comedienne in her) who smiled and smiled and smiled with paralysing inanity to proclaim the merits of somebody's tooth-paste. A duologue involving the purchasing of shirts through the ages was also rather feeble.

Fortunately the assets are many. First and foremost is Mr. Douglas Byng as Lot's wife ("We'd a villa in

(Continued on p. 400)

A SURPRISE FOR AUDIENCES AT THE VAUDEVILLE: While the theatre was closed, preparatory to the presentation of Charlot's new revue, *Stop-Go!* Tom Titt, the well-known caricaturist, painted on the walls of the auditorium and the bars life-size representations of famous actors, actresses, authors, composers, and journalists associated with M. Charlot during his twenty-three years of London theatrical management. In the picture the artist is seen at work putting the finishing touches to the caricatures of Bobby Howes, Jack Hulbert, Cicely Courtneidge, Eddie Cantor, and June. Philip Page, "The Sphere's" dramatic critic, and Charles Graves are among the representatives of the Fourth Estate in this gathering of the elect

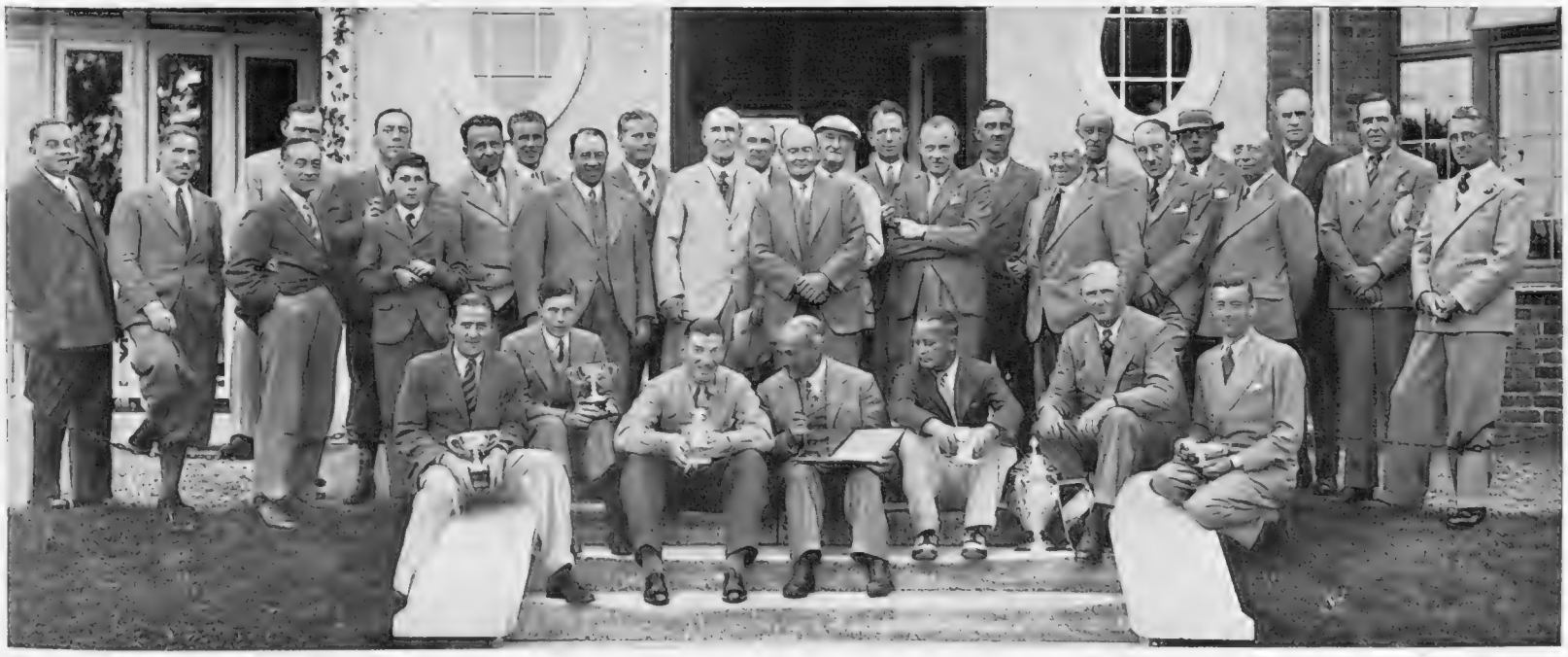
The Sporting Touch

Aboyne Highland Gathering and Other Items of Interest

On right—A WEIGHTY MATTER: A competitor throwing the weight at the sixty-fourth Highland Games held on the village green at Aboyne, Aberdeenshire. A downpour of rain marred the day's sport but there was a large attendance which included the Marquess of Huntly, Chieftain of the Gathering, the Marquess and Marchioness of Aberdeen, Lord Reay, and Viscount and Viscountess Arbuthnot. A picturesque feature of the programme was the parade of pipers

THE GIRLS' GOLF CHAMPIONSHIP: Miss Mary Cowan (Royal Ashdown Forest Ladies) driving during her match with Miss W. Beesley (Cooden Beach) in the first round of the competition on the Stoke Poges club's course, near Slough. There was a surprise result on the same day when Miss N. Jupp, who won the championship last year at the age of thirteen and at her first attempt, was beaten by 4 up and 3 by Miss F. R. Morris

PERSONALITIES AT "THE SPHERE'S" INVITATION GOLF MEETING which was held a few days ago at Sunningdale, Berks. (*Left*)—Mr. Alfred Pemberton, Mr. Douglas Reed, Mr. W. D. H. McCullough, and Mr. C. Snelling on the 17th tee. (*Right*)—Major P. C. Burton, winner of "The Sphere" Challenge Cup with a gross score of 75, and Mr. W. D. H. McCullough, the runner-up



ON THE STEPS OF THE SUNNINGDALE CLUB: Competitors at "The Sphere's" Invitation Golf Meeting posing for a picture after the presentation of the prizes. Standing in the centre is Mr. J. C. Akerman, Vice-Chairman of Illustrated Newspapers, while on his right is Mr. J. Bewsher, the organiser of the meeting. In the foreground are (*left to right*) Mr. Richard Sykes, Mr. Neil McGloin, Captain E. M. J. Buxton, Mr. Bernard Weatherill, Mr. N. C. Dibben, Major P. C. Burton, and Mr. W. D. H. McCullough. (*These pictures of "The Sphere's" meeting were unavoidably held over from publication last week on account of pressure on our space at the last moment as a result of the death of the Queen of the Belgians*)

The World of Books

"The Wooden Pillow"—a Story of Japan before the Industrial Revolution: An Outstanding War Book by an American

Reviewed by
VERNON FANE

I SUPPOSE it must be inevitable, with the development of the modern newspaper, that the literary field should be invaded by books which depend for their effect upon high-speed action, and what is loosely called realism, but which some people call "rough stuff." This is particularly so in fiction, although so-called "popular" biographies are not immune from the disease. And so it comes about that the American novel dominates this field. More and more of these writings are being imported, and (what is even more important) their influence is beginning to tell upon our native writers.

Novels of this school are now lauded as masterpieces, as indeed they may be, for a crime reporter is as capable of masterly work in his own sphere as any other craftsman. The story must rush: its dramatic effects must be achieved with all the artifices of a stunt "feature" writer. The result, I fear, is that some of these alleged masterpieces are written in a style that would make the late Henry James undulate with packed sentences of horror; and the late George Moore would certainly be stirred to one of his more devastating epigrams.

The tendency may or may not be a bad thing, for the inculcation of a certain amount of virility can do no harm to the novel in its present state. But full-bloodedness is not necessarily realism, and there are even those who may not find in hyperæmia a necessary literary virtue. I am perhaps old-fashioned enough to believe that the business of every writer is to be able to write; and since the number of those who can dwindles with the passing of each publishing season, it is with some pleasure that I am able to welcome a novel of which first and foremost one can say that it is an exquisite piece of technique and beautifully written.

NINA TOYE, author of *The Twice Murdered Man*, a novel with an Italian setting which has just been published by Messrs. Eyre and Spottiswoode. The writer is the wife of Geoffrey Toye, the music critic

There is not much action, in the quick-fire American sense, in **THE WOODEN PILLOW** by Carl Fallas (Heinemann. 7s. 6d.); but there is not a page in it which can fail to give pleasure to anyone whose ear is attuned to beautiful word cadences, or who can follow with the author the exquisite pattern of the design of his story.

Briefly, it is a story of Japan of not so very long ago, but a Japan in which the motor car was a rare and devilish invention, and in which there were no radios, bowler hats, or mass-production factories; in fact, at a time before the land had fallen under the spell of the west. It is the love story of an Englishman named Grier and a girl named O Kaya San. Very little happens to disturb their idyll, except the inevitable parting which they both achieve without recourse to heart-break or to tragedy.

Without copious quotations, for which I have no space, it is impossible to convey the quality of Mr. Fallas' story. The love affair is real enough, but it is the background, exquisitely worked in and beautifully wrought, which leaves scenes which linger in the memory of the reader. It is perhaps a sign of a reaction against the thing I have mentioned above, that this novel has been made one of the popular choices; and if it is a sign which is going to lead the novel back to a truer literary plane, Mr. Fallas will not have written his book in vain.

Another book which reveals its author as a writer of distinction and ability is Miss Helen Beauclerk's **THE MOUNTAIN AND THE TREE** (Collins. 8s. 6d.). Without a doubt, Miss Beauclerk is an artist in words—perhaps a little more self-consciously so than Mr. Fallas, but nevertheless one who can, with carefully chosen imagery, build up the illusion of her story.

For her stories are all pure illusion, and for their allusiveness she has gone deep into anthropology—a subject upon which I am not qualified to dispute with her. Sufficient is it to say that in these four long-short love stories the author sets out to trace the decline of matriarchy, and follows the rise of man's supremacy through the history of the struggle between a dying paganism and Christian asceticism.

Each of these stories is perfect in itself; and the four of them make a homogeneous whole in a book which no one with any sense of dignity or beauty in letters can fail to appreciate.

By way of contrast we arrive at **HONEY IN THE HORN** by H. L. Davis (Lovat Dickson. 8s. 6d.), which is one of those western pioneer novels, not exactly typical of what I have mentioned above, but of another school which relies for its strength upon the hardships and struggles of pioneer peoples. This kind of book must be of considerable interest to those whose enthusiasm can be aroused by such a theme. For my part, I am afraid I cannot get on with them, for I seem to have read everything there is to be written on the subject. I know the trek of the covered wagon, the sound of the axe in virgin forests so very well. If, in addition, the book contains dialect which I, for one, find it almost impossible to understand, then I must confess myself defeated.

Which brings me to another American book, this time a war book called **HEAVEN HIGH HELL DEEP** by Norman Archibald (Heinemann. 8s. 6d.). Neither the author nor the publisher makes it clear whether this is a narrative of fiction or of fact, but if we pay Mr. Archibald the compliment of placing it in the latter class then he must be congratulated on being alive to tell his thrilling tale.

War books about flying are all too rare, and the suspicion of fiction has lain upon too many of them. Mr. Archibald's story concerns his first flush of enthusiasm for the fighting job to hand, his desire to be a dashing airman, his training, his aerial combats, and his experiences as a prisoner of war.

MARCH COST, who came into prominence about three years ago with her novel *A Man Named Luke*, is the author of *The Dark Glass*, which was published by Messrs. Collins on Monday of this week

The story indubitably has the human and authentic touch, for no-one, quite like an American, can roll up to the colours with so much patriotic fervour and desire to get at the throats or the whatnots of the enemy. The same gusto, the same enthusiasm, and the same degree of horror are present in the fighting chapters and these serve to indicate that the book is the product of experience rather than imagination.

In the prison camps he has a really bad time, and we are ready to believe that such bad times were had in German prison camps, and as readily we can believe that the only humane person encountered in the hell-deep section was a Bavarian officer, for it is well known that the Bavarians are among the gentler of the Germanic tribes. If *Heaven High Hell Deep* makes no great contribution to the literature of the last war it at least makes full use of the material to hand, and is what the Americans would call a swell story.

With Mr. Warwick Deeping we are back on familiar ground, for he above all writers knows how to extract from the novel the formula of popular success. In Bloomsbury, and in places where they affect to despise this sort of thing, there are some who would be well benefited by a study of Mr. Deeping's mastery of technique and to cogitate upon his ability to tell a good story.

For **SACKCLOTH INTO SILK** (Cassell. 7s. 6d.) is not only a good story, but it is invested with the kind of appeal to the best in human nature which is Mr. Deeping's strong suit. In this case you take the son of a flamboyant Jewess, proprietress of an old clothes' shop, who made a fortune during the war. In his Islington days Karl Slopp dreamed of the theatre, and his toys were its puppets. He was determined to become a great playwright, and by Jehovah he did.

Success came easily to him, and he grew up to dominate what he had dreamed about, and to be spoiled by it. Charles Kesteven, he thought, was a long way removed from little Karl Slopp, nor was he the man to allow the self-sacrifice and devotion of his family and friends to put the brakes on his rise to fame.

But Mr. Deeping is not the author to allow pride to ride with mammon without a fall, and Karl must eventually learn that spiritual values must have some place in the life of even a successful young Jew. The end is as poignant as anything Mr. Deeping has ever done, and I should say that this novel is destined for as sure a success as any of its predecessors.

THE HOUSE OF THE SPANIARD by Arthur Behrend (Heinemann. 7s. 6d.), opens in a lonely house on a marsh with sinister men and bullets whistling in the mist. Swiftly it proceeds to Spain, and dashes in and about the Pyrenees, with political plots and desperadoes woven into it all. In other words Mr. Behrend has written an exciting adventure story, and he has written it with a good deal of technical skill and an eye on local colour which he apparently understands very well. There are enough thrills in it to keep most people awake to the last page.

BLACK (Constable. 7s. 6d.) is the story of a little negro boy in London, and the fact that the background of the story was going to be England and not America was enough to make me enjoy the book from the first few pages. In the past year I seem to have read a great many books about Jews who lived in New York but longed to be back in Poland, and negroes who lived in Chicago and longed for the South. This engaging little boy, who was brought up by two women in a brothel, who had charming manners, a philosophic outlook, and no desire to be anywhere else, seemed like the answer to a prayer.

It was, actually, too good to be true, for in the second half of the book the boy, now almost grown up, feels that well-known call of the blood and goes, for the first time in his life to Africa. There was some excuse in his case as Mr. Humphrey Gilkes puts it, because he was in love with a coloured girl called Anna, and she was in desperate need in Cape Town.

Nevertheless, from the moment young Michael Black leaves England the story ceases to be credible. It is still as vivid, twice as full of action, but it is unconvincing, and instead of being a successful *tour-de-force*, a violently contrasted second movement in the composition of the book it is a falling-off and the reader is faced with a depressing anti-climax.

A CONTRIBUTION TO WAR LITERATURE: Norman Archibald, an American writer, whose book *Heaven High Hell Deep* contains an enthralling account of his training as a pilot, his aerial combats, and his experiences as a prisoner

The first part of the story though, in which Michael Black is successively errand boy to the two ladies of easy virtue, an unexpected member of an expedition of slum children to the country-side and a pageboy at a fashionable hotel, is delightful, and has been written with much humour and sympathy.

Michael is by no means the conventional tough of most negro fiction, though once or twice he does revert rather amusingly to type, as on the occasion of some village theatricals when he improvises a solo dance and shocks and delights his audience in equal proportion.

Nice Mr. Price, and nice Michael Black, too. It was a pity he went to Africa.

A BOOK LIST

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THE LAST DAYS OF SUMMER

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The children set out for the mountains to enjoy the last days of fine weather before the holidays end and they have perforce to return to school

A climber examines the outlines of a neighbouring peak through her field glasses

AMONG THE CLOUDS

LEARNING TO CLIMB

A little boy aids his sister as she begins the downward journey

Refreshing and crystal-clear water at the end of an arduous day's climbing

A COOLING DRAUGHT

d

THIS ENGLAND : H

HIDE AND SEEK

The growing corn provides admirable cover for these children as they play the age-old and ever-thrilling game

". . . WHILE THE SUN SHINES"

Bringing in the hay much later than in th whitewashed homest

AN ESSEX HIGHWAY: Children gathering wild flowers as they make their way home from Sunday-school

REAPING THE UPLAND FIELD

Harvest Time in the Countryside

...on a mountain farm in the Lake District, where the harvest is ...the lowlands. Perched on the hill in the distance is the ancient ...stead which farming folk have lived in since Elizabethan times

The farmer's son assists with the harvesting on a farm on the Berkshire Downs

Where the tractor has not as yet superseded the horse-drawn reaper. Harvesting in a wheat-field near Fordham Mill, Cambridgeshire

HOLIDAY HELPER

NOONDAY SIESTA: Drowsy August and September days, when the stooked corn provides an inviting resting place

GREER GARSON: A pastel portrait by A. K. Lawrence, A.R.A., of the rising young actress whose performance with Nicholas Hannen in Samson Raphaelson's new play *Accent on Youth* has been accorded high praise. The artist, who was made an Associate of the Academy in 1930, was a pupil of Sir William Rothenstein, is a Prix de Rome scholar, and is responsible for the mural paintings in the new Bank of England building

A PAGE of ART NEWS

DECORATING THE "QUEEN MARY": Stephen Bone, son of the famous artist, Muirhead Bone, watching his wife working on a canvas which will form part of the interior scheme of the giant liner

A POLITICAL PROBLEM PICTURE: Frank O. Salisbury seen at his Hampstead studio putting the finishing touches to a new portrait of Signor Mussolini. The Duce gave the artist several sittings

The CLASSIC ART of DRAPERY

Grecian, Egyptian, and Florentine Inspiration

MASKED BEAUTY—Like a figure in a classic bas-relief, Schiaparelli's exquisite evening dress reveals the lovely lines of the figure and then veils it with floating draperies which cover the shoulders and hang in graceful folds at the back. The Florentine hair net which covers the back of the hair and the painted fan-like mask are details which she stresses throughout her collection

A FLORENTINE CAPE—Lelong is the supreme master of the art of movement in dress. Here he makes a beautiful black velvet dinner dress, lightening the hem with a deep border of coarse lace, and veiling the arms and back with a cape which fastens with a jewelled clasp between the shoulders

EGYPTIAN CURVES—Crêpe georgette is a favourite evening fabric, and Patou uses it in black for this model, which shows his brilliantly clever Egyptian drapery. The slender roundness of the hips is emphasised, and the extremely low décolleté reaching almost to the waist is a feature of this season

A MODERN RAMBLER IN SPAIN

(Continued from p. 390)

broad smile while they watch Martin Luther holding a Roman Catholic priest's nose literally to the grindstone.

Speaking generally, north and central Spain is astonishingly cool in August—at least it was when I was there. Three nights out of four I was glad to wear an overcoat when I went out. The people are remarkably courteous and hospitable and always anxious to practise their English on you if they think you do not know your way. They are at least as poor as they were when the King was on the throne, probably poorer in fact, because so many of them had children in the first year of the revolution when they thought that the departure of the king automatically would mean a workless paradise for all.

The only really ugly town I encountered in my 2,000 miles was Bilbao, the inhabitants of which, however, say that it is the only place in Spain where the meaning of work is really understood.

Corunna, despite the burial of Sir John Moore, also does not please. It is very trippery despite its label "The City of Crystal," a title which however, it deserves from the prevalence of entirely glass-fronted houses in the richer parts of the town.

At the special request of the editor I say nothing about the bull-fight at Toledo which I witnessed. This subject causes so much controversy. I will say this, though, I was delighted to have seen it, but I am equally delighted to know that I never intend to see another.

CURRENT DRAMA

(Continued from p. 392)

dear old Gomorrah"), and as a jovial virago from Melton Mowbray, or some such spot, in a hilariously funny hunt-ball scene. "John Peel" was, of course, sung. Soon after I had whispered to my learned companion that it was a mistake to sing, as they did, of that celebrity being kenned in his "coat so gay" and that the word should really be "gray," Mr. Byng, in one of his few serious moments, explained the error himself in a pleasant little lecture. The academic touch in *revue intime* was a welcome novelty.

Mr. Byng also, with a companion, sang with amusing cattiness, in a wedding-reception scene, of certain of the be-paragraphed, the mention of whose names seemed to tickle a first-night audience. To what extent, say, two people from Guildford with seats in the upper-circle next Tuesday week will be amused I would not care to calculate.

Pretty girls dance well; a dancing number in which they pirouetted with dummy partners strapped to them was quaint and original. Masks of elderly male celebrities above those girlish forms was another ingenious touch, if, to me, *macabre* to the verge of being revolting. Miss Mary Brian is a neat little person and a good dancer. Not, perhaps, much more than that. Miss Dorothy Ward, trying her hand at this type of entertainment for the first time, was vastly successful. She has the necessary streak of flamboyant exaggeration which is the essence of burlesque, and her good spirits are both unflagging and infectious. She and Mr. Byng carry a cheery entertainment to a real triumph.

"As Bad as I Am."—Mr. Sydney Carroll, urbane and imperturbable, informed a friendly, but slightly puzzled first-night audience at the Ambassadors' Theatre that the farcical comedy *As Bad as I Am* had been produced mainly to exploit the talents of Miss Pamela Stanley, who plays the heroine. That may—or may not—have been some consolation to the other members of the large cast which stood round him. But if Miss Stanley, a bright and promising little thing, is as intelligent as I take her to be, she must have wished that a better vehicle could have been found. She did what she could with it; nobody could have done much.

This heroine forges cheques, blackmails her father—the Duke of Something-or-other—steals her maid's racing winnings, gets £500 from a company-promoting crook by promising he will not be exposed, makes one man pay £10 and another £250 by becoming "engaged" to them, although she is secretly married, carries out some nefarious business with her mother's jewels, and cheats at poker. At the end of the last act she receives a windfall and pays back a debt or two, though I imagine that had this not arrived she would have continued being an odious and dull little criminal until the cows came home or the cops came in.

I suspect *As Bad as I Am* to have been written by either a very young man or a very old one; if I am wrong, I shall not worry. I do not even worry why such a line (spoken by a clergyman) as "I have moved congregations, so why shouldn't I move a card table?" should have been considered funny and rewarded with a laugh; or why a brother of a famous actress did not know her stage name.

Mr. A. Bromley-Davenport, with whom the atmosphere of pleasant country houses is a natural affinity, here figured in an unpleasant one, and nobly strove to be amusing as an impossible duke.

ARE ATOMS INHABITED?

A Suggestion Emanating from the Thought that there are so Many Fantastic Theories at which the World has Laughed, and Yet which a Later Generation has Found to be Only too True

By PROFESSOR A. M. LOW

SCIENCE knows *very* little. Our mathematicians are so fond of telling us that time and space may not exist or that they are negative, but they seldom add that a confession of ignorance on this point renders it virtually impossible for the word fact to exist.

Only a few years ago it was established to the satisfaction of everyone at our greatest University that heavier-than-air flight was impracticable, while even schoolboys knew that the atom was the smallest part of a substance which could take its place in a material change. All these statements were lies. They were so wrong that it is often forced upon me that many of our present day theories must be equally absurd.

In a spirit of some humiliation, engendered by the thought that our descendants will regard us with pity, I suggest that the atom might conceivably be an inhabited world, not one whit dissimilar from our own. That these atoms would not be visible if an orange were enlarged to the size of St. Paul's dome, does not weigh with me as relevant.

Now that we have found that technicians cannot deal in fact alone, and that they are forced to witness the future of knowledge disclosed by many other persons, I would like to give my reasons for disbelieving that our little world is the only type upon which life can thrive. If indeed such reasons are necessary. For we all know now that atoms and electrons resemble the universe, upon which so much has been written, to a quite uncanny degree.

Look up to the sky one clear night and then think; and think again that all you can see is no more than the curtain before a stage so vast as to be totally beyond conception by our minds. A worm at a modern talking picture would have the same chance of appreciating the delicacies of American literature as have we to grasp the meaning of infinity.

But at least we can realise that time and size are comparatively unimportant. Our dreams teach us that time may travel backwards, and that ordinary linear dimensions have no more effect upon apparent realities than the size of animals in a Noah's Ark to a child. When you are woken in the morning in the middle of a dream in which the shooting of a lion took pride of place, the noise may well turn out to be the tap upon your bedroom door. That dream must have been thought out backwards in your mind, for otherwise the two sounds would not synchronise.

It is of little account whether the Universe is extending continually or contracting, and it is no more important than if the works of a watch are looked at through the right or wrong end of a powerful telescope. The right end *is* only the "right" end to human sense of proportion. As far as we know our own world is surrounded by countless others at distances so great that the light travelling from their suns occupies periods which to us are meaningless. There is no difference between one hundred million years and one hundred and twenty million years to a man, any more than the span of your life would seem possible to a butterfly. So look at your own world through the wrong end of a telescope, so big that everything is reduced in such proportion that atomic distances could be gauged and you will ask yourself "Why one earth out of a solar system with the characteristics of those we know should be any different in its contents, speed, position or its gravity."

The whole of our impressions each day are relative. We imagine a motor omnibus travels fast because horses still are seen in the streets. We think a Pekinese dog is beautiful because it is not a quarter of an inch in length, and we entirely forget to transmit these ideas to our observation of things so small that they are invisible altogether.

I believe it is true that a schoolboy, when asked to define the Universe, said—"Oh! it is just lots of things twiddling round and they are all of different sizes." Now I am humble enough to think that this description is quite good. It is probably as near the truth as any other and applies very nicely to the universe we think we know, and to the atom which we pretend to understand even better.

For centuries it has been realised that one drop of water is not unlike our earth, and why we should think that because we have invented the ultra-microscope and found that particles of electricity probably fly away from radio-active compounds, all life must be centred in the shape of men and women, is something which only extreme vanity can explain.

Take the case of light as being the standard of movement, and perhaps the thought, of all life as we profess to know it at the moment. Light does not come from the sun at all. It has no existence outside the human body any more than the smell of an onion. If I drop a brick upon your toe, you would not say that the pain had travelled from my hand to your toe. Neither must you think that light moves from the sun to your eye. The flaming heat of our particular sun happens to set the ether into motion, a vibration which travels to you and chances to produce an impression of light on your face. But this ether tremor might just as well cause a flower to open, for in it are countless other wave formations which do things to ourselves and other creatures about which we are completely in the dark.

Not so very many years ago the idea of microbes was laughed to scorn by most learned men of this country. In short, germs could be neither seen, touched, heard or smelt. To-day we look upon these particular methods of receiving an impression as being only a few of others which have become atrophied in ourselves. We know that cosmic rays exist, we know that X-rays exist though we cannot see them, and we are even beginning to imagine that there are just as many forms of life about us to-day at which we are laughing, as were there 500 years ago when people were burnt alive for denying the roundness of the earth.

The air is full of sounds we cannot hear. The ether is moving with light effects we cannot see. It is absurd to assume that because we can use a short wave length light to see simple things too small to scatter ordinary rays, we have come to the end of our knowledge about the very small. The atom is like an egg which no one has yet opened by other than mathematical practices which may have less relation to fact than the theory of an economist to practical working conditions.

Supposing there are other forms of life besides our own "They" may exist in thought alone. These beings may see by what we call heat, or they may take their nourishment from the air like certain insects. It is possible that the rarer gasses in our own atmosphere are as poisonous to them as they are essential to ourselves. For reasons, by the way, still quite unknown and which have only recently been discovered.

It is a popular joke to suggest that men might live in Mars, but there is no need to descend to the artistic folly of drawings of people with two eyes, two arms, and two legs. You and I can do without eyes to a certain extent. It is only because for countless millions of centuries we have super-sensitised part of our skin into eyes that we use these particular adjuncts to ordinary sight by ordinary wave-lengths.

I do not myself understand why we should assume that other creatures from other worlds must necessarily be visible to us at all, any more than we can see an atom itself. And if that is logical and true, why should there not be people in this atom which behaves and seems just like any other part of the universe—if, I admit, a trifle smaller?

So that is why I believe that the Atom may have "people" upon it. That the electron may not represent the ultimate degree of size, that electrical particles may not exist as we think we know them to-day, and that if our world was looked at through a telescope a 1,000,000 miles long, it would lose all resemblance of shape and size, while we ourselves would be relegated to the happy position of invisibility which quite probably is now the prerogative of very many other inhuman beings.

Have you any idea what happens to the energy dissipated by thought? We know that it is not wasted, so perhaps you can say where it has gone. Certainly *I* cannot, but I am sufficiently sensible to know that a physical existence is not the only one, and I am in good company when I say that I think very poorly of our futile attempts to prove the contrary.

If someone were to tell me to-morrow that this world of ours is an "electron" or part of some strange system of that nature, I doubt if I could raise any more surprise than is registered by the words:—"Just fancy that."

Whether you have stalked the fairway as a conqueror or crept from bunker to bunker in shame and fury, the perfect ending to your round is a sparkling glass of Whitbread's Pale Ale

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THE RAYON WORLD OF TO-DAY

A Special Section of "The Sphere" Illustrating and Describing One of Britain's Most Prosperous Industries

THE INTRICACIES OF WARPING: Four hundred bobbins, each on a separate spindle, engaged in the making of the warp at Messrs. Courtaulds' Rayon Works at Bocking, Essex. The glistening threads are drawn from these bobbins through a fine comb where they are contracted to a space of less than 1½ in. They are then rolled on a revolving circular frame, the process being repeated until the desired width is obtained

A Wonder Fabric of the Age

How Rayon Has Revolutionised Textile Production

By C. PATRICK THOMPSON

AMONG the outstanding economic phenomena of a changing world, rayon ranks high. It is transforming the textile picture in every country, and notably in Britain. In this island the capital back of production aggregates £150,000,000. To-day's market capitalisation of the biggest producer alone is £87,400,000; which is not excessive when you note that the balance of profit for 1932 was £4,039,879, for 1933 £5,051,294, and for 1934 £4,747,986, and that the enterprise last year earned £1,817,789 for the ordinary shares, and paid 7½ per cent., thus coming close to what in practical profit-earning terms we call "prosperity."

Something like three-quarters of a million jobs are now directly dependent on the British rayon industry. British finance has a huge stake in world markets in rayon, while the two biggest British producers have either substantial interests or subsidiary production plants in Canada, the United States, Germany, Italy, and France. As for output from the island production plants, it continues to expand in astonishing fashion. It was 84,000,000 lbs. in 1933, 93,000,000 lbs. in 1934, and the end of the current year should see it running at 140,000,000 lbs.

In an age of synthetic raw materials, with chemical science harnessed to machine production and economic problems, a textile industry which saw silk, cotton, and wool going unchallenged would be an anachronism. Just when the real challenge came, and made a distinct difference, let the rayon historians of the future decide. But it first budded as an industrial success when Count Hilaire de Chardonnet, the French scientist, came upon the key to the riddle of reproducing by artificial means those precious shining threads which the silkworm produces by one of Nature's miracles within its own body.

Science was intrigued, and finance excited; but neither probably dreamed of where the discovery would take a human race developing a machine civilisation. Doubtless they thought to cut in on the silk market; a development, half-a-century later, carrying the viscose solution produced from wood pulp into direct competition with raw cotton, I can scarcely have occurred to those early pioneers. The first artificial silk anyway, compared to the contemporary substance, was like the first internal combustion engine against a modern aero-engine; and between the first trickle of artificial silk turned out by a hesitant, doubting old-established crêpe-manufacturing concern called Courtaulds, and the broad, shining rivers of strong, smooth, even-textured yarn threads which now flow out in ever-increasing volume from the spinning machines of the leading producers, the gulf is as wide as that between Bleriot's channel-conquering air machine, and the latest Air Force flying boat.

Artificial silk has, indeed, vanished in the evolutionary process. What we have now is "rayon," a neat Wellsian word; and the manufacture of rayon in immense plants, equipped with machines which are miracles of mechanical ingenuity, has become one of the great pillar industries of capitalist civilisation in a dozen countries.

(*Continued on p.* 407)

THE RAW MATERIAL FROM WHICH THE FABRICS ARE MADE: The compact sheets of pulp, emanating originally from Scandinavia or Canada, seen at the factory before being placed in steel tanks, where they are soaked in a strong solution of caustic soda

FROM A DREAM

ALTHOUGH rayon is put to a greater variety of purposes than any other textile material, the average person knows little or nothing about its origin and manufacture. It is not even generally known that England takes first place in the invention and development of rayon manufacture. No doubt there have been many weavers and others who have in times long past dreamed of the possibility of man at some time producing a thread which would be at least as fine as silk, dye as easily as cotton, be easily produced in large quantities, and, unlike cotton, wool, and silk, be free from climatic variations or disease. To an early English scientist, Dr. Hooke, has to be given the credit for first stating in writing the possibility of man one day by mechanical means producing a fibre like that of the silkworm, but it was over 200 years before his prophecy was fulfilled.

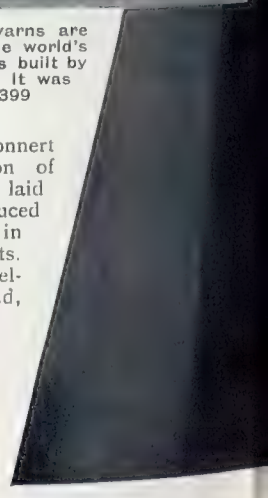
Although to a certain few has to be given the honour of discovering the various processes which are now used, it must not be forgotten that the invention of rayon, like most of our present-day inventions such as the aeroplane, wireless, and cinema, has resulted from a long line of scientific investigation and discovery. It was previous research upon the nature of cellulose that made it possible for the English electrical engineer Sir Joseph Swan to be the first to produce rayon by squirting a solution of nitro-cellulose. Swan called it "artificial silk," a name by which it is still known to many, although no longer used by the industry in this country, America, Canada, France, Italy, Japan, etc. Swan called his new material "artificial silk" because it had the appearance of silk, but as it is now a far larger and more important industry than real silk, as the phrase "artificial silk" is an awkward one for continuous use, and because of the frequent misrepresentation that has taken place in the past, the word "rayon" has become almost universally adopted, and in France and Italy is legally compulsory.

Swan's discovery is of particular interest because he did not invent his "artificial silk" for use as a textile but as a material for making filaments for his electric lamps. So it is that although he was the first to produce rayon it is as joint discoverer with Edison of incandescent lighting that Swan's name is generally associated to-day. Swan took out his patent in 1883 but did nothing to develop his method on a commercial scale. The next year, however, Count Hilaire de Chardonnet took out a patent and he is often referred to as the original inventor, and actually credit must be given to him as the first commercial producer because he developed his process to the extent of establishing works in France, Switzerland, Belgium, and England, and the nitro-cellulose process to this day is often spoken of as Chardonnet. At present there is only one factory working the nitro-cellulose process, and this is only on a very small scale. Meanwhile experiments with other cellulose solutions had been tried, especially by Weston in 1882, with cotton dissolved in a copper ammoniacal solution, a process later developed in 1897 by Pauly, and now known as the cuprammonium process. This process seemed to be gaining ground because of the ease with which fine yarns could be produced, but the rapidity with which the next process was developed reduced the copper method to minor importance.

By far the most important is the process of the two English chemists, Cross and Bevan, who after systematically investigating cellulose reactions since 1880, discovered in 1892 a method of forming a solution of cellulose which they called "viscose" because of its distinctive characteristic. This they did by steeping cellulose in a strong solution of caustic soda, and then treating the resulting alkali cellulose with carbon bisulphide. A reddish gelatinous substance, cellulose xanthate, is thus formed which is soluble in water. Although Cross and Bevan had discovered the solution they were not equipped to develop the mechanical method of producing threads, and they therefore obtained the assistance of Stern, who was one of Swan's associates. It was Topham, who was working for Stern, who with great genius invented the system of spinning now becoming almost universally employed. Not only did Topham invent the "pot" method of spinning with which his name is always associated, but he also invented pump control of the spinning solution, and the multi-hole jet. Of the men already mentioned Topham is the only one who survives, and in the employment of Courtaulds he still takes an active part in the industry. In another article is described how Courtaulds took over the Kew work of Cross, Bevan, Stern, and Topham, and developed on a commercial scale the viscose process.

A fourth process of rayon manufacture is that of cellulose acetate. The main difference between this process and those previously mentioned is that whereas in the other processes the resulting fibres are regenerated cellulose, cellulose acetate is a compound product with distinctly different characteristics, particularly as regards its affinity for dyestuffs. Little produced lamp filaments from cellulose acetate in 1895, and yarns were made experimentally by Bronnert in 1899, but the foundation of subsequent developments was laid by Miles in 1904, when he produced a cellulose acetate soluble in acetone and other solvents. This process remained undeveloped until after the war, and, although cellulose acetate plants have been established in most rayon-producing countries, the tendency is for that process to supplant the nitro and copper processes and not to supplant the viscose process. Estimates of the quantity of each type of rayon vary slightly, but the following

AN IMPORTANT CENTRE OF PRODUCTION: The Castle factory at Flint where yarns are produced by the viscose process, the method by which over three-quarters of the world's rayon is manufactured. In the foreground are the ruins of Flint Castle, which was built by Edward I, captured by the Parliament in 1643, and four years later dismantled. It was here that Richard II surrendered to his great rival Bolingbroke on August 19, 1399



CARRYING NOXIOUS FUMES
built was said to be the

TO REALITY

The Evolution of the Art of Rayon Manufacture Described

By A. B. SHEARER

percentages of the world production of rayon can be taken as reliable :—

Viscose - -	88·0 per cent.
Acetate - -	7·5 per cent.
Cuprammonium	4·0 per cent.
Nitro - -	–·5 per cent.

It is quite clear that the viscose process is far and away the most important.

The principal raw material for viscose manufacture may be wood pulp or cotton pulp. The wood pulp is generally from Canada or Norway and is a high-grade sulphite pulp specially made for viscose production. Cotton pulp is obtained from America, and is made from the small cotton seed hairs, called "linters," which are too short to be used for cotton spinning. The pulp is received in bales. Samples are taken from each consignment and carefully tested, and the pulp stored in special warehouses to get uniformity of condition. The sheets are then cut by a guillotine to fit the long baths or tanks in which they are soaked in caustic soda. The baths in which the sheets are steeped are constructed with powerful hydraulic rams, and after the sheets have been steeped for a sufficient period the rams are put into action to squeeze the excess of soda out of the sheets. The sheets are thrown into a large shredder, a machine very similiar in appearance and action to a dough mixer. Here, large spiral blades operating against heavy serrated bars tear the sheets to pieces and grind them until they have the consistency and appearance of breadcrumbs. The "crumbs" are left for some time in a controlled atmosphere to allow the chemical action of the caustic to become complete and they are then transferred to the churn room. The crumbs are placed in large hexagonal churns and a measured quantity of carbon bisulphide is run in as the churn is turned. The effect of this churning is to turn the crumbs from a creamy white insoluble fibrous material to an orange red sticky gelatinous mass soluble in water: this new product is called cellulose xanthate. The cellulose xanthate is emptied from the churns into large mixers where it is dissolved in a weak solution of caustic soda, the action being helped by paddles which keep the solvent in continuous circulation. When the xanthate has been completely dissolved the solution is run off and stored in large tanks to mature to a suitable viscosity for spinning. During this period it passes through a series of filtrations to remove all solids, as ultimately the solution in spinning has to pass through holes which may be as small as one five-hundredth of an inch, and the stoppage of even one hole in a jet means a faulty yarn from that jet. The spinning solution has also to be submitted to a vacuum operation to extract any minute bubbles of air or gas, as these if left in the solution would break the flow of the solution at the jets.

THE FINISHED YARN: Girls engaged in inspecting and grading hanks or skeins of rayon after they have been washed, bleached, desulphurised, and dried, and before they are ready for delivery to customers either in hank form or wound

INTO THE UPPER AIR; The great chimney at Messrs. Courtaulds' Coventry factory which when largest in the country, having a height of 365 ft. and containing about two thousand tons of bricks

The solution when finally ready for spinning is a clear sticky liquid very like syrup in appearance. If some of this solution is slowly poured into a beaker of acid it is precipitated as a continuous thread, the viscose solution coagulating in the acid and finally becoming a solid length of cellulose, which when cleared of the residuals of the processes it has passed through has most of the properties of other celluloses such as cotton and linen, but has the important additional advantages of continuous length, uniform thickness, and superior appearance.

After the explanation of how the viscose solution is converted into a solid thread by precipitation in an acid bath, the spinning process will be more easily grasped. The diagram (see page 408) shows very clearly what takes place. The solution is pumped up from the "cave" or cellar where it is stored to the machine, which has about a hundred jets and boxes. At the machine the solution passes forward to each jet through little pumps which are designed to give an even flow, reducing variations to a minimum, as the resultant fibres will be regular or irregular in direct ratio to the evenness or unevenness of the flow of the viscose solution. It is the remarkable control which is now obtained by accurately designed pumps which is mainly responsible for rayon being so much more regular in size than any other textile yarn. From the small pumps the solution passes through a final filtration to guard against any solids which may have got into the solution on its way to the spinning machine. After its final filtering the solution arrives, through a long tube, at the jet or nozzle. The jets, in appearance, are like small flattened thimbles and are generally made of platinum or a platinum alloy. In the flattened part of these jets are bored a series of holes, the sizes varying from one five-hundredth of an inch to one two-hundredth of an inch. The object of the tube is to lower the jet into the bath of acid, the tube being suitably mounted on the machine to permit of it being raised to examine the jet or lowered to have the jet well under the surface.

The action of the pumps forces the viscose solution through the fine holes of the jet, and the solution oozes out in a manner not unlike perspiration through the skin; it is not squirted like water from a spray as some writers have suggested. As the viscose flows from the jet the spinner lowers the jet into the bath and draws his finger gently over the face of the jet; the effect of this action is to draw from the jet a series of fine fibres or filaments, one forming from each hole in the jet. These filaments the spinner carefully guides through the bath, passes them round a guide-hook of glass or porcelain at the far side of the bath,

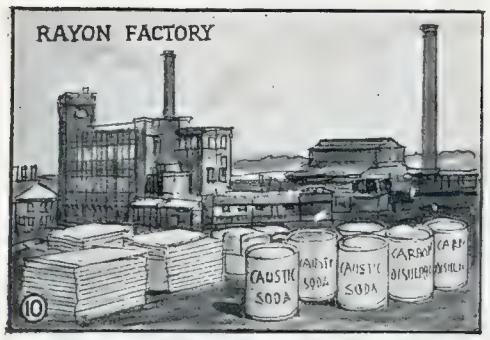
(*Continued on p.* 418)

(BLEACHING MATERIAL) (STEAM)

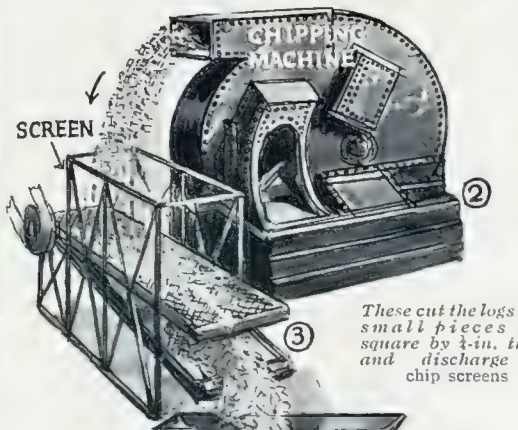
The essential raw materials of rayon are wood, coal, salt, lime, sulphur and water. These produce the pulp boards (or cellulose sheets) which go to the rayon factory

(BISULPHITE OF LIME)

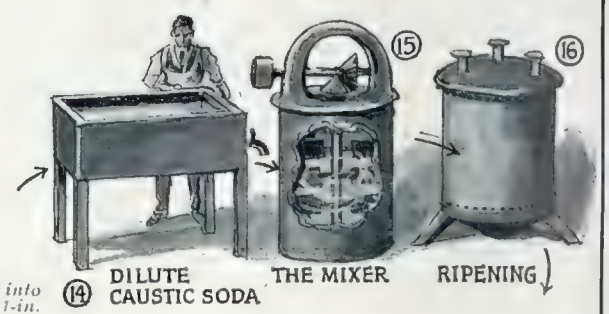
The wood, which is spruce, is of twenty-five to thirty years growth. The logs are cut in lengths of twenty feet and stored for a period of seasoning. They then undergo the preliminary processes of washing and barking, and are carefully inspected before being conveyed to the chipping machines



The first stage in the production of rayon when the pulp sheets have arrived at the rayon factory, is to treat them with caustic soda to form the compound called alkali cellulose. *The sheets are soaked in caustic soda and then subjected to hydraulic pressure to remove excess of liquor*



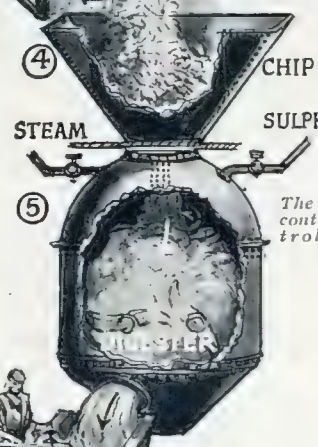
These cut the logs into small pieces 1-in. square by ¼-in. thick and discharge on chip screens



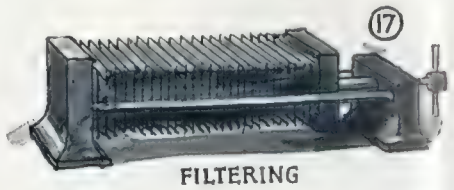
Dissolved in a weak caustic solution "Cellulose Xanthate" is filtered and thoroughly mixed. It has now to ripen to reach the proper consistency for spinning. When ready it is again filtered

The screened chips are now carried to the chip bins, *from whence they are fed to the* digester

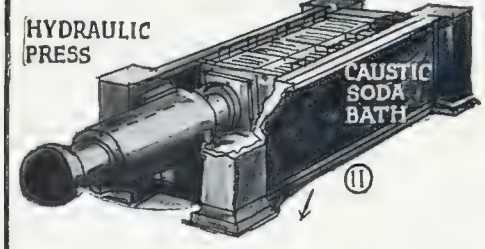
Here, sulphite liquor *and* steam *are introduced*



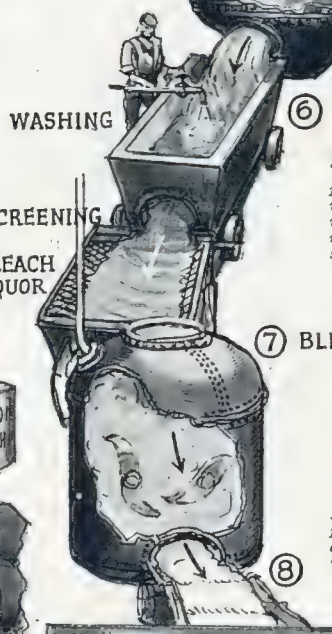
The cooking process continuing under controlled temperature and pressure



Air bubbles are extracted, and it now goes to the spinning frame

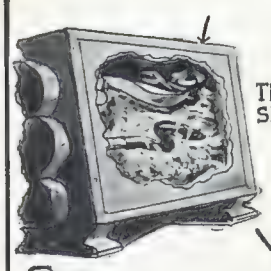


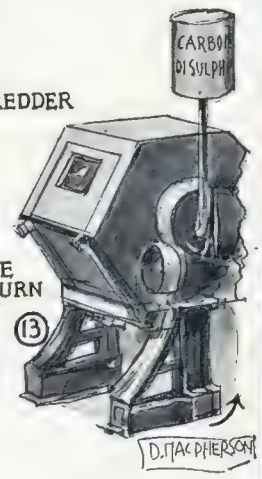
From thence the sheets go to the shredding machine. *After treatment for several hours the white flocculent mass known as "crumbs" is turned into containers and sent to the "churn" room*



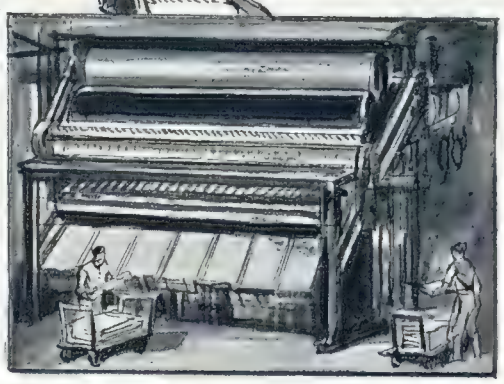
When digested or "cooked" the pulp passes into the washing troughs. There it is thoroughly washed, next passing over screens to the bleaching vats

Showing how viscose solution is precipitated in the form of a continuous thread when poured into a beaker of acid





Here they are placed in large, hexagonal "churns" and treated with carbon disulphide. The resultant mass is bright orange in colour, gelatinous, and known as "Cellulose Xanthate"



After bleaching the pulp passes to the drying machines where it is dried on steam-heated cylinders, and formed into sheets cut ready for packing

FROM FOREST TO FACTORY

A Diagrammatic Drawing Showing the Various Stages in the Production of the Viscose Used in Rayon Spinning

MASSIVE TREES THAT VIE WITH THE DELICATE SILKWORM

Lumber Converted into Minute Threads

The production of viscose represents the first, longest, and possibly the most intricate stage in the manufacture of rayon goods. By following the numbers on this drawing it is possible for the reader to trace the process from the moment a log is felled in some Canadian or Scandinavian forest until the solution of cellulose xanthate, or viscose, is ready to be squirted into the spinning machine, coagulated in an acid bath, and converted into the minute threads which go to make the beautiful silk-like garments that are now so universally worn. The viscose process is not the only method of rayon production, in fact there are three others, but it is by far and away the largest and it is estimated that it is responsible for about 88 per cent. of the world's output

A WONDER FABRIC OF THE AGE

(Continued from p. 403)

The rapidity of the rayon conquest can be glimpsed by reference to the figures of world production. It was only 35,000,000 lbs. in 1918. Thereafter, it rose by bounds, the hot pace being set after 1925. In that latter year all the plants on earth outputted only 100,000,000 lbs. Last year, the output was nearly 750,000,000 lbs., and production and demand are expanding so fast that the 1935 figure will come close to 900,000,000 lbs., and the thousand-million-pounds mark should be reached before the end of 1936.

The 1934 production represents about 6 per cent. of cotton production, 22 per cent. of wool and jute production, and eight times silk production. Rayon has thus left real silk far behind, on a price basis, and is steadily cutting into the field of rival textile materials on both a price and quality basis. The scope for further expansion is obviously immense even before wool and cotton began to be seriously affected by the invasion of the newcomer. It has been calculated that if production rises over the next decade at the same pace as it has done over the last decade, and the world consumption of textiles remains unchanged, the yarns and staple fibres made from viscose solution will put half the cotton-growing industry out of business.

But it seems improbable that expansion will go on at this extraordinary pace, or that the synthetic material will oust the lower grade and commoner types of cotton so easily, either on a price or a utilitarian basis. It is also fallacious to base any view of the future on the supposition that world consumption of textiles will not rise over the next decade. The portents indicate that consumption will rise. Mankind is under-consuming in textiles as in many other necessaries; a phenomenon explicable by reference to the slump, exchange troubles, tariff barriers, lowered purchasing power, and a few other things which have not of necessity come to stay with us for evermore.

Orienting Britain in the world picture, we see that she has the biggest investment in rayon (the American Viscose Company, Courtauld-controlled, is responsible for a third of all U.S. output), but is only third on the list of producers. This represents an advance, however, because before she expanded production so largely she was fifth, owing to a sudden and enormous increase in German and Italian rayon production.

American production is roughly double that of Britain, and almost all of it goes to supply the vast domestic market, whereas about 20 per cent. of the British output is sold in Empire and foreign markets, which are improving. In South Africa alone, Britain notched her rayon sales up from £5-,013 in 1932 to £291,470 last year. This looks, and is, good. But we can improve on it considerably, since it still amounts to only a fourth of the whole Dominion rayon imports. France, Italy, Germany, Czechoslovakia, and Switzerland, all get a small share; but the lion's share goes to Japan, whose sales last year totalled £450,740 (incidentally, Japan has lately elbowed the Italian rayon rival out of Abyssinian markets, much to the latter's indignation).

Japan, of course, is a rayon story in herself. With up-to-the-minute machinery, State encouragement and backing, tireless salesmanship, and labour costs about a tenth of those prevailing in the West, she has much the same advantage in the rayon battle as Britain has in the copper battle, with those new, low-cost, black-labour Rhodesian mines opposed to the old, high-cost American mines.

But we do not live in the old *laissez-faire* world. Nations and empires will not allow essential industries to be undermined and destroyed by foreign, low-cost rivals. There is a great rebalancing and sharing movement in international trade. New devices and agreements protect markets and buffer the competitive clash. There has been a strong incentive behind the Japanese drive in world markets. She needed foreign exchange to pay for imported raw material for armaments and for her North Asian imperial adventure. Rayon exports provided the answer to that problem. (Italy and Germany, later imitators of the astute Japanese policy, have not been so successful, largely because markets are now shared more evenly, and a former wide-open situation, which moved Mr. Samuel Courtauld to forecast the ruin of the textile industries of the West unless governments took defensive action, has been taken in hand, and reversed.)

It seems likely that, barring some internal explosion in Nippon due to the dangerous accumulation of militaristic and political explosive gasses, Japanese production will rise until it tops the world list, with the U.S. second, and Britain third. But British rayon can still prosper, thanks to its strong position and highly efficient direction.

It is worth noting that the present excellent position of the British rayon industry was not achieved without a battle—in fact, a whole series of battles, the effects of which are still visible in closed-down inefficients up and down the country, and in the annual accounts and balance-sheets of some of the present producing companies. Dreams have been dreamed about rayon, dangerous dreams.

The late Alfred Lowenstein dreamed a large one. He saw rayon production and consumption increasing so fast that the field appeared to offer illimitable get-rich-quick possibilities to the daring and far-seeing financial *conquistador*. Cellulose acetate had come into the field to compete with viscose—a legacy of a war-time British governmental demand for a non-inflammable airplane dope, which dope the Dreyfus Brothers, Swiss chemists, made out of cellulose, before turning their attention to producing a synthetic silk thread from their chemical concoction. Lowenstein fought for control of the Dreyfus enterprise, for control of an international empire of artificial silk. He left almost as much wreckage over the international rayon field as Napoleon left over the European political field.

It was a time of fantasies and illusions. The City company promoters found they could sell artificial silk propositions to the public with ease. So production plants multiplied, despite the industry leaders' warnings that a production capacity was being built up that must spell disaster. The boom year of 1928 saw the high tide, with some thirty companies producing or trying to produce.

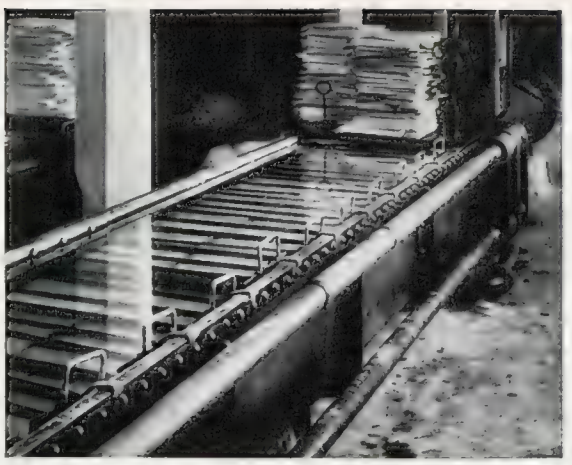
Half fell by the wayside, and are still where they fell. Some were doomed anyway, being so hasty and inexperienced that they bought the wrong spinning machines; laid down the wrong type of viscose production plant for feeding the spinning machines; had lay-outs and production programmes which let chemicals and viscose run to waste, so that they could not have made profits under any circumstances; put their plant down in a locality where the water supply was inadequate or unsuited to rayon production; and committed other technical errors.

The great depression, and the deliberate price-cutting policy of the leading producer, in the end cleaned up that unfortunate situation, and brought the industry from sickness to health (not that all producing companies are financially healthy and earning profits even now).

Now, new vistas open in a new era. In the last five years the rayon technicians have forged ahead. They have devised new and better ways of making rayon. They have also extended their control over the whole synthetic process.

An entirely new type of woven textile, for instance, with highly decorative qualities, has been produced by cutting viscose films into narrow strips. The terms "films" and "strips" perhaps do not convey much to the layman, accustomed to associate the one with the familiar camera film, and the other with something at least an eighth of an inch wide and certainly wider than a thread. But you need a micrometer to gauge the thickness of these rayon films and strips. The standard film is 0·0007874 in.

(Continued on p. 414)



THE FIRST STEP IN THE MANUFACTURE OF VISCOSE-PROCESS RAYON YARN is the making of "alkali cellulose," and to do this a known weight of sheets of wood pulp is placed in the long tank shown in this picture and there steeped in caustic soda for about two hours when the penetration of the chemical should be complete

THE SECOND STEP: After their bath of caustic soda the wet pulp sheets are milled in this battery of grinders till they become fine white flocks, known as "crumbs"

THE THIRD STEP: The "crumbs" after leaving the grinders and undergoing a special maturing process are then transferred to these hexagonal churns where they are treated with carbon bisulphide and changed from an insoluble material to an orange red sticky substance which is soluble in water and is known as cellulose xanthate

THE FOURTH STEP: The mixers where the cellulose xanthate is dissolved in water and emerges as viscose liquid

On right—THE FIFTH STEP: Before the viscose is ready for pumping into the spinning machines for turning into rayon it is forced through these filters of fine cloth to remove all impurities

THE FORESIGHT OF DR. HOOKE

The following is an extract from the "Micrographia," published in 1664 by Dr. Robert Hooke, and in which that learned but little-known scientist, who saw so far ahead of his times, first mooted the idea of producing silk by mechanical means:

A pretty kinde of artificial Stuff I have seen, looking almost like transparent Parchment, Horn, or Ising-glass, and perhaps some such thing it may be made of, which being transparent, and of a glutinous nature, and easily mollified by keeping in water, as I found upon trial, had imbib'd, and did remain tinc'd with a great variety of very vivid colours, and to the naked eye, it look'd very like the substance of the Silk. And I have often thought, that probably there might be a way found out, to make an artificial glutinous composition, much resembling, if not full as good, nay better, than that Excrement, or whatever other substance it be out of which the Silk-worm wire-draws his clew. If such a composition were found, it were certainly an easie matter to find very quick ways of drawing it out into small wires for use. I need not mention the use of such an Invention, nor the benefit that is likely to accrue to the finder, they being sufficiently obvious. This hint therefore, may, I hope, give some Ingenious inquisitive Person an occasion of making some trials, which if successful, I have my aim, and I suppose he will have no occasion to be displeased.

COURTAULDS

Pioneers of Rayon Manufacture By the Viscose Process

TO many people Courtaulds signifies a fortunate investment, and for the rest they have some hazy idea that the company has something to do with artificial silk. In the textile industry, however, one can judge how much a man knows about modern developments by the extent of his knowledge and appreciation of the pioneer efforts of this company. The popular idea is that the great development and amazing profits made by this company have resulted from "luck" in taking up a profitable form of manufacture when it was new. Few have made comparisons with the progress of other companies which at the same time or since have taken up the manufacture of rayon; or again have stopped to consider whether after all there was not some essential background that compelled success in any new textile venture.

To understand the present company, with its nominal capital of £32,000,000 (which has by the stock market price of its shares many times been valued at from two to five times that amount), it is necessary to examine the past history of the company. Although so large a public company, with something in the region of 50,000 shareholders, the Courtauld influence predominates almost as much as if it were still a partnership and a family concern. Like many other British textile families, the Courtaulds are of Huguenot origin. The first of the Courtaulds to enter the silk trade was George, born 1761, a grandson of Augustine, who as a child was brought over from France. George was apprenticed to a relative in Spitalfields and had a varied career, but one which definitely showed a spirit of trying to do things differently. George started on his own account when twenty-two years of age with machinery which was a definite improvement on that on which he had been trained. After three years he sold out and went to America. He returned from America to be an assistant in a Kent silk mill, but the political differences of the time caused him to leave that position. Then he tried paper manufacture (a curious far-away link with Courtaulds' present development of transparent paper), and then in 1798 with a Mr. Witts he built a silk factory at Pebmarsh in Essex.

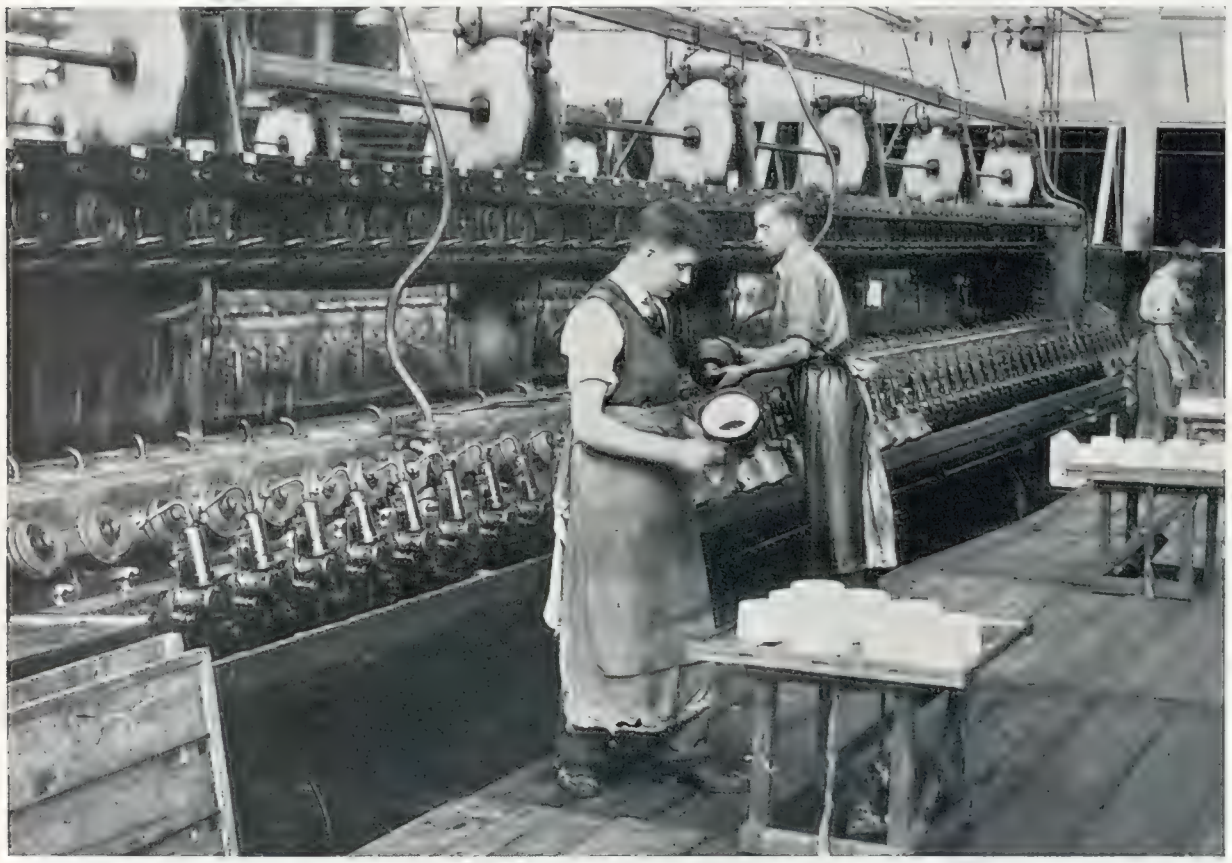
This restless spirit would not settle, and in a partnership formed in 1809 bought a flour mill at Braintree, altered the flow of the water to increase the power, pulled down the old buildings, and built a new mill. Later, everything seemed favourable for a comfortable and successful business life in Essex, but far from settling down at the age of fifty-nine he again sailed for America, taking two sons with him, where he bought an estate in Ohio. Full of idealism, his aim was to establish a union of capital and labour for the development of the estate, one of the first examples of co-partnership in industry. Fever and malaria destroyed his efforts, and he died in Pittsburgh in 1823. It was Samuel, the son of the pioneer George, who laid the foundations of the present business. Samuel worked with his father at Pebmarsh and at Braintree, and when his father was having litigation with his Braintree partner Samuel started on his own account in Bocking.

Another interesting individual enters the story in the person of Samuel's brother-in-law, Peter Alfred Taylor, who became a partner, but who in later years was better known as the Secretary of the Anti-Corn-Law League. This partnership examined the possibilities of various premises and sites for further development and decided upon the Old Baize Mill at Bocking, where the present company still has its weaving headquarters with a large dyeing and finishing plant. The partnership moved all the machinery there in 1822. In 1824 Samuel wrote to his brother George in America to tell him that he had just completed arrangements with a silk house for still further expansion and urged George to return and join him as he required his assistance in preparing the new machinery which was to be seven times the size of the existing plant. So George returned at once to Bocking to make the machinery.

Enough has been said to show the spirit of the founders, but Samuel was not content with silk throwing. He paid the firm of Grant, Bayliss and Co. to allow him to inspect their Braintree crêpe factory, and they let him see their methods, imagining that six months of weaving would ruin Samuel. But out of that experience, Samuel by enterprise and new methods built up a reputation for mourning crêpe that made his name known throughout the civilised world, so much so that in all countries "crêpe anglais" became the correct mourning. The firm prospered and various partnerships were formed from time to time, until at last in 1891 it was converted into the private company of Samuel Courtauld and Co., Ltd. It was now evident that the company would have to develop on other lines than mourning crêpe, and for this purpose two new men were brought into the concern, Mr. Henry Greenwood Tetley and Mr. Thomas Paul Latham. Mr. Tetley was a Yorkshireman who before joining Courtaulds was with Listers of Manningham, with an extensive knowledge of textile manufacture, and Mr. Latham (afterwards Sir Thomas) was a Lancashire man who had run a successful agency business for Courtaulds and Listers in Manchester. These two men made great changes in the silk weaving factories which Courtaulds at this time had in Essex and Lancashire, but undoubtedly it is because of Mr. Tetley's great interest in "artificial silk," backed by Sir Thomas Latham's amazing business abilities and the steady backing of the other directors of the company, that made these two men stand out as two of the most remarkable men the textile industry has ever been blessed with.

The directors of the company first examined the possibilities of artificial silk in 1892 but decided that it was not then a commercial proposition. Ten years later Mr. Tetley suggested that further investigations be made and in 1904 the company bought up the English rights of the Cross and Bevan viscose patents. It should be realised that Courtaulds' directors were not taking a part in a successful and profitable new industry; when they entered, other companies were failing, and the first English artificial silk company had just closed down. The textile journals and many self-styled experts prophesied failure and poured scorn on the new textile; and everything that was bad that could be said was said.

The company was in 1904 converted into a public limited company, and means taken to provide the necessary finance. A wood factory was bought at Coventry which after being altered and enlarged was equipped for the new process. The Kew experimental plant of the Cross, Bevan, and Stern syndicate was transferred to Coventry. The third notable pioneer of viscose manufacture comes now on the scene—Mr. Harry Johnson, of Macclesfield origin, being transferred from being silk-throwing manager at Courtaulds' Braintree mill to being manager of the viscose factory at Coventry. The difficulties which Mr. Johnson and his assistants had to overcome would have broken the hearts of most men, but with remarkable grit and an astonishing display of technical ability they converted what until then was little more than an experiment into a successful new industry. There was only the rudimentary machinery of Topham's invention, everything in the way of machinery had to be designed, adapted, or modified.

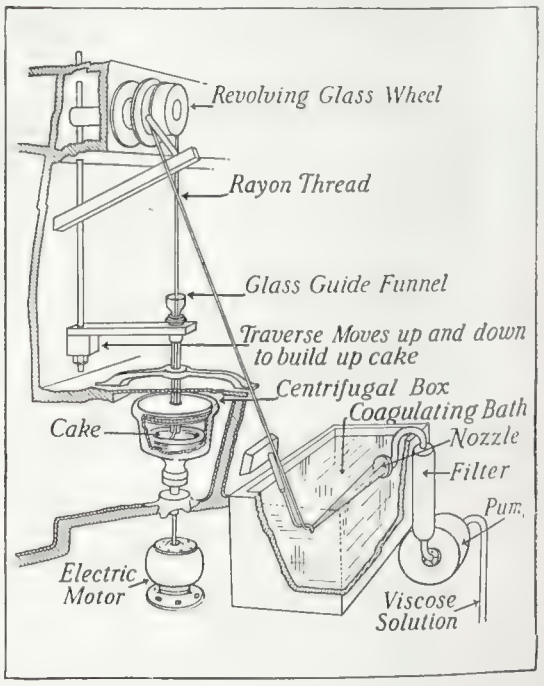


A VISCOSE SPINNING MACHINE: Men engaged in removing from the centrifugal boxes the compact cakes of yarn which are produced in the manner described beneath the diagram on this page

But having produced the first viscose yarns Courtaulds' difficulties had only just begun, because by some means or other the yarn had to be made into fabrics. Here was probably where Courtaulds' success really lay. Messrs. Tetley, Latham, and Johnson were all essentially textile producers, and viewed everything from the textile rather than from the mechanical or chemical angle. The new products of Coventry were tried out at the Essex mills. The knowledge gained there was valuable in two directions; it discovered at once any technical textile deficiencies in the yarn, and it established a technique in weaving the new yarns. From the former the Coventry factory benefited, and from the latter Courtaulds' customers were able to benefit when it was decided to offer the new yarns to other manufacturers. One of the most astounding features of the Courtauld method has been that, although themselves weavers on a very large scale, they have seen that the wise line of development was to develop a public supply of rayon and give any other weaving concern the benefit of their own wonderful technique as weavers, dyers, and finishers. There were two years of disappointing struggle at Coventry, then two more years of building up, and in 1909 the process was proving a definite success.

So much was the Coventry factory a success, that the firm decided to buy the United States

(Continued on p. 410)



A VITAL STAGE IN THE PROCESS OF RAYON MANUFACTURE: A diagram showing how the viscose solution is pumped up to the spinning machine and exudes through the minute orifices of a nozzle of platinum-gold alloy into the acid bath where it coagulates and becomes a fine fibre or filament. These filaments are all drawn together and passed by way of a revolving glass wheel into the centrifugal box, where the revolutions of the box, together with the traverse motion, builds up a cake of thread

Above — A REELER AT WORK: When a "cake" of yarn is removed from the spinning machine it has then to be made up into skeins or hanks, being wound on to the metal swifts shown in this picture. The girl is engaged in lacing the hanks with tiebands, some of which are coloured in order to indicate to buyers the quality or size of the material

On left—READY FOR THE FINAL PROCESSES: A girl reeler with the newly-made hanks of yarn which before they are ready for delivery to customers or to be sent to the weaving factory must first be bleached, washed, dried, desulphurised and finally examined and graded. The sizes of yarn are reckoned in deniers which are calculated by the yardage per lb.

How the Yarn is Reeled into Hanks on Metal Swifts

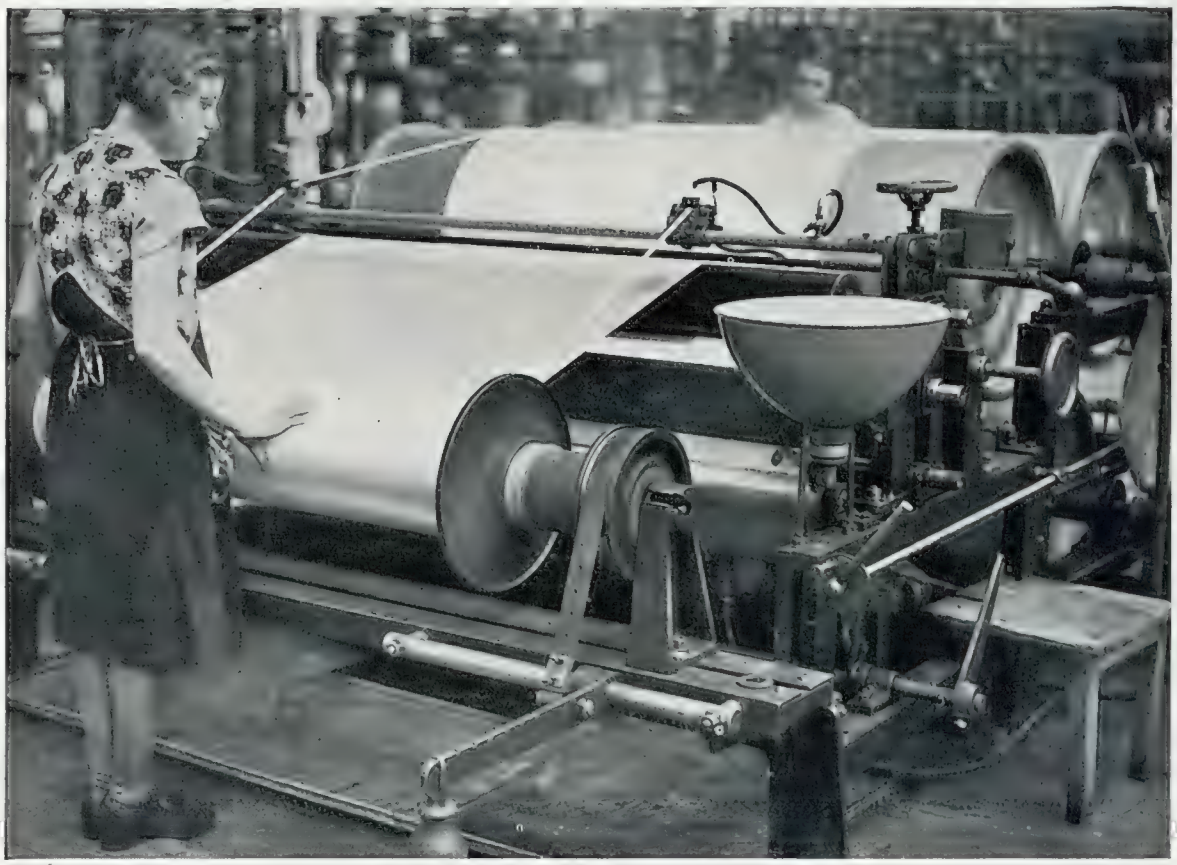
An Important Process that Follows the Spinning

THE ROMANCE OF COURTAULDS

The Story of the Firm's Development of the Viscose Process

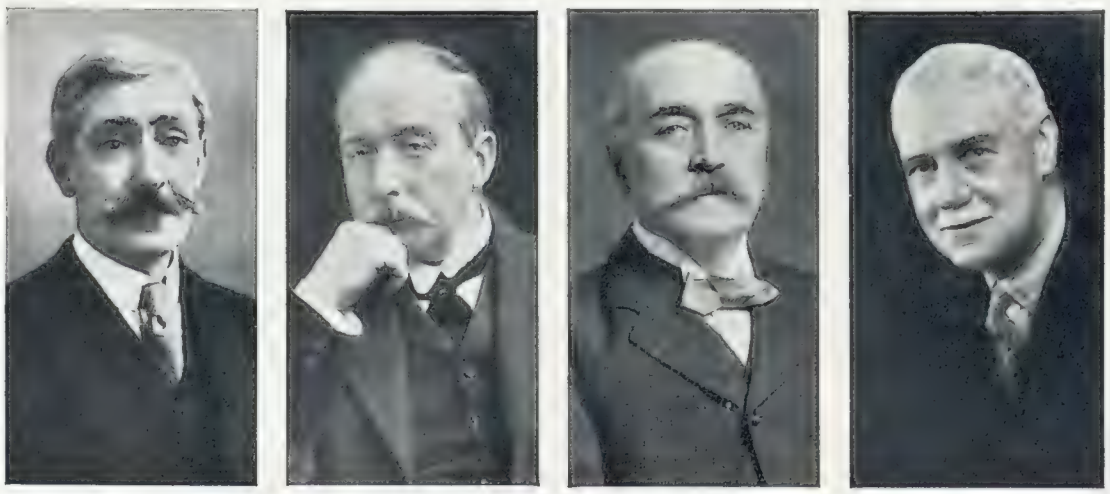
(Continued from p. 408)

patents, then owned by the American Viscose Company, which had been unable to develop the process. The first great public excitement about the company took place in 1912, when a dividend of 50 per cent. was announced and a re-arrangement of capital recommended. The basis was the issue of fifty £1 shares in a new company, Courtaulds Limited, for every one of the £5 shares in Samuel Courtauld and Co., Ltd. So the nominal capital of the company was increased, without new subscription, to £2,500,000, of which £2,000,000 was issued. The following year the new shares had a dividend of 7½ per cent. The further capital development by bonus issues until the present capital of £24,000,000 ordinary and £8,000,000 5 per cent. preference was reached is so well known that it need not be described here. It is worth emphasising, however, that the policy has always been to place substantial amounts of profits to one side for developments, and to make big allowances for depreciation, so that not only could existing machinery be replaced when worn out, but mechanically sound machinery could be scrapped when a better machine or process was designed.



RAYON WARP SIZING: This process appears to the layman to be a miracle of precision. For here the warp, as yet unsupported by the weft, is seen in the form of a continuous sheet, each minute silken cable lying side by side and passing gradually into the trough containing a gelatinous liquid. This gives the threads cohesion during the operations that are to follow. For, after drying, the size acts as a varnish and protects the threads from damage that may be caused by the repeated rubbing of the cone through which they pass

Extensions of manufacturing plant and the exploration of new uses have gone side by side. After weaving, use was found for the yarn in hosiery (but only after nearly every hosiery manufacturer had been offered free samples and refused to be bothered with the stuff), in laces, and in knitted goods. A typical example of Courtauld enterprise was the purchase in 1917 of a factory in Halifax for the manufacture of furnishing fabrics. Up to this time no manufacturer of upholstery fabrics would touch rayon, and incidentally it should be said that up to that time, with few exceptions, the production of furnishing fabrics in this country was limited to very low qualities of a distinctly uninteresting appearance. At Halifax definitely new furnishing fabrics were produced consisting of rayon mixed with cotton, with wool, and with silk: the effect was soon apparent, the new fabrics were so attractive that other manufacturers were compelled to copy and make use of rayon.



Elliott and Fry

PIONEERS: Edward John Bevan (*left*), and C. F. Cross (*second from left*), the inventors of the viscose process, who took out patents in 1898 and sold the English rights to Courtaulds in 1904. *Second from the right* is Henry Greenwood Tetley and (*on the right*) is Thomas Latham (afterwards Sir Thomas), both of whom had a large share in the re-organisation of Courtaulds and the establishment of the rayon industry in this country. The former was an expert on methods of manufacture, while the latter possessed out-of-the-ordinary business ability

The example of Courtaulds has been such that it has so stirred up the production of new lines that almost every home in the country looks brighter and more pleasing as a result of their efforts and, what is probably still more important, this country has risen from a position of almost no merit where furnishing fabrics were concerned to being first in the field. The recent purchase of the Arrow Mill at Rochdale is for a similar purpose. The Courtauld staple fibre was being neglected by spinners, only relatively small quantities being used for "novelty" yarns. This was not good enough for Courtaulds, who decided that only by their buying a large cotton mill, and showing by example what could be done in mass production of "bread-and-butter" yarns, would the trade be convinced. Already the consequences are apparent, and there is little doubt that when the large new producing plant at Flint comes into action next year, Lancashire and Yorkshire mills will be ready to take up the output.

It is impossible in this article to describe all the lines followed by Courtaulds in the development of new uses for rayon in women's and men's underwear, stockings, etc. But a certain amount of attention should be given to some of the technical developments made. In the early days the first difficulty was to make the yarn carry itself, its strength was almost negligible. The early yarns were of coarse denier, both so far as the yarn and the fibres which formed the yarn were concerned. (It is sufficient here to explain that the denier is the unit of measurement of silk and rayon yarns and fibres: for example a silk fibre from the worm is usually from 1½ to 2 denier, a fine silk yarn is 11 to 15 denier, and a spider spins a thread about one third of a denier.) The early viscose fibres were about 16 denier and were easily frayed and broken. Step by step the position was improved until in 1927 Courtaulds were offering a standard yarn of 2 denier filaments. Before the war 250 denier was looked upon as a relatively fine yarn and 150 denier was treated with great respect; now enormous quantities of 60 and 75 denier are being used as a regular thing and 250 denier is in little demand. Then there was the matter of appearance.

In 1927 Courtaulds introduced a new yarn, "Dulesco," and its soft, pearl-like lustre caused an immediate revolution in the whole trade, not only in stockings, for which Dulesco was introduced, but in underwear and woven fabrics, swinging over from the old bright, almost glass-like, yarns, to the "dull" varieties. Now the whole industry is concentrating more and more on rayons of various degrees of dullness. These improvements in quality could only proceed side by side with improvement in the strength of the fibres, a feature Courtaulds have always pioneered, even to the extent of making a yarn so strong that it was stronger than any other textile fibre. However, the trade decided that such strength was unnecessary except for a few special purposes and that its extra cost of manufacture did not warrant large-scale production.

New uses and improvements in the yarn called for increased production. The works of the British Glanzstoff Company at Flint were purchased in 1916 and in the following year Mr. Tetley was made Chairman and Mr. Latham Vice-Chairman. Mr. Harry Johnson was now Joint Managing Director with Mr. Samuel Courtauld, who for some years had been Mr. Tetley's assistant and understudy. In 1918 the weaving side was further developed by the purchase of a second weaving mill at Leigh. Additional properties were bought at Coventry, Nuneaton, and Flint, and further capital extensions took place. Mr. Tetley died in 1921, after having seen the full development of his dreams and also having seen the capital of the company multiplied sixty-fold in less than twenty years. Production of the British company alone had increased from nothing to nearly 8,000,000 lbs. at the time of Mr. Tetley's death. Mr. Tetley as Chairman was succeeded by Mr. Samuel Courtauld, then in the early forties, who continues to guide the destinies of the firm down to the present time. Mr. Courtauld took an early opportunity to outline his policy in these words: "Up to the present time (1924) the demand for artificial silk has grown continuously and has kept ahead of supply. These conditions can hardly be permanent, although we may confidently expect that any cheapening of the article will lead to its increasing use. We therefore look forward to an eventual lowering margin of profit, and we shall rely upon increased production and constantly improving methods to maintain our hold upon the industry."

A subsidiary company was formed in Canada in 1923; La Soie Artificielle de Calais was started in 1925; Glanzstoff-Courtaulds was formed jointly with the principal German firm; and a large interest

(Continued on p. 424)

GLEAMING SKEINS OF FINISHED RAYON

A PRODUCT WITH A MULTITUDE OF USES: Hanks or skeins of rayon ready to be woven into hosiery, underwear, pyjamas, nightdresses, dressing-gowns, evening gowns, wraps, beachwear, shawls, coat linings, ties, furnishing fabrics, and all the countless other goods into which they can be converted. Before leaving the factory the hanks are graded by girl inspectors who examine them for defects, such as broken filaments, and then separate them into the various qualities

On *right* — IN THE DRYING ROOM: Where the yarn, after being washed to remove the chemicals, is placed in ovens and subjected to a warm current of air of controlled humidity

Rayon Share Values

A Survey of the Existing Situation

By SECURITAS

PREPARING THE YARN FOR THE WEAVING PROCESS: Rayon being wound from the wire swifts on to flanged bobbins. A picture taken in a machine room at Messrs. Courtaulds' Nuneaton Works

THE outlook for rayon is now more interesting than it has ever been. World production is up 30 per cent. on the previous high record. Yet, for the first time in years, supply and demand about match. The price structure of the industry is not menaced by immediate or near-future over-production. Signs now that the continuous decline in the rayon price level—prices of representative rayon yarns have been halved in the last seven years as a result of the deliberate, constructive policy of the leading producer—is coming to an end, if it has not already touched bottom, are all-important in a survey of the share market and the outlook for individual producers.

In almost all other fields, the trouble has been contraction of demand and consequently of production. Earning capacity has shrunk with the contraction of the volume of business. A new flow of orders has meant a return to the dividend list. Expansion of business has caused sensational rises in share values in the market. But the rayon field has provided the exception to this rule in both the slump and the recovery phase stock markets. Indeed, phenomenal expansion has gone hand-in-hand with a dismal record of losses, or accounts which have just broken even, or earnings which have only just covered fixed charges and left nothing over for preference arrears or ordinary share dividends.

The Harben (viscose silk manufacturers) Company may be quoted as an example of what has been happening—of the paradox of rising production without the accompaniment of operating profits. This company notched up production 15 per cent. during the year ended April 30, and experienced a demand for its special yarn which exceeded the supply. This sounds like bumper profits and increased dividends. However, the financial result was a profit of £22,842, which was turned into a net loss of £6,432 after debenture interest, depreciation, and other charges had been provided for. The explanation of this curious state of affairs is to be found in the fact that yarn prices have been forced down faster than production costs can be reduced. This company in its last financial year was still 10 per cent. on the wrong side, yarn prices having dropped 50 per cent. in the last seven years, while production costs had declined only 40 per cent.

What a price rise means can be measured by the one-day movement in Courtaulds' shares on the August 8 announcement by the Viscose Corporation of America—Courtaulds-controlled—of an advance of 2 cents a pound for various types of viscose yarns. Courtaulds' £1 shares promptly rose 1s. 1½d. There are 24,000,000 of these shares. Work out the rise in terms of the market capitalisation of this enterprise, and you find that 2 cents rise in the American producer's product had the effect of increasing the market valuation of the British parent company by no less than £1,350,000 in a single day.

Courtaulds, of course, stands by itself. Its directors have always known how to make profits, even in the worst times for rayon manufacturers. It is the only one of the rayon companies which managed to keep in the dividend list during the depression. Dividends since 1929 have run 10 per cent., 6, 5, 4, and 6 per cent. For 1934 the dividend was made up to 7½ per cent. for the year. The interim this year was 1 per cent. up, at 2½ per cent., but the austere chairman warned that this should not be taken as an indication of a higher 1935 total dividend than the 1934 one. Courtaulds' ordinary shares have moved between a low of 42s. and a high of 60s. 6d. over the last eighteen months period; and now, at 58s. yield under 3 per cent. on the last dividend. The cumulative preference shares are among the strongest of their kind in the market, and yield no more than £3 14s. at their current price. The financial strength of the company is enormous. It has some 20 millions of liquid resources and stands to benefit more than most from any general betterment in the profit-earning capacity of the rayon industry, while it is in the forefront of new-development exploitation, and has extensive interests in the biggest producing concerns in Canada, the U.S., Italy, and Germany.

British Celanese is burdened with the heavy cost of its prior charges. Nevertheless, the notable improvement in its profit-earning capacity is reflected in the current price of 14s. for the 10s. ordinary shares, which have yet to receive a dividend. The second cumulative 7½ per cent. preference shares have come up in the last eighteen months from 10s. 8d. to 24s. The 7 per cent. first cumulative preference shares have come up from 15s. 9d. to 27s. 6d., at which price they yield just over 5 per cent. The first debenture stock, redeemable after 1942, is selling to yield 5½ per cent. These prices and yields indicate the market view of the risk in view of the capital structure and prior charges, and the company's chequered financial history and earnings record.

The shares of the big Italian producer, Snia Viscosa, are quoted on the British market. They have been up to 85s. 7d. this year (they went a shilling higher in 1934), but they have since declined to 55s.–65s. on apprehensions of what Mussolini's Abyssinian adventure is going to do to Italian business in general and Snia Viscosa dividends in particular. At their current price the shares yield nearly 9 per cent. on the last dividend.

British Enka shares moved between 10s. 6d. and 6s. 6d. last year, have been as low as 5s. 6d. this year, and are now priced at 11s. The upturn in the price is mainly due to the hope that negotiations will succeed for the acquisition by Courtaulds of this company at a price of at least 80s. per spindle, at which price British Enka shares would be worth 12s. apiece. The 1st mortgage debentures at 95–100 (they were selling at 90 last year) yield 6 per cent.

The company would have done much better financially if it had not had to charge a working profit of £76,748 with—among other things—£20,923 to cover exchange losses and losses due to the halving of the Excise duty, to 6d. per lb. In addition, the company charged against reserve a large part of the charge not in the manufacturing process. But the drastic price cut made by the leading viscose producer last year was the chief fly in this company's ointment.

Midgets as well as giants can earn profits in the rayon field, when they are efficiently managed. The little £137,500 Melso Company bears witness to this. The company made £6,222 for the year ended June last, and maintained its 1934 dividends: 6⅜ on the 6 per cent. preference shares, and 4 per cent. on the 5s. ordinary shares. The balance sheet is strong. Current assets are £43,073, with cash £10,645 and stock £11,525; while liabilities, including dividends, total only £6,106, or less than the cash held by £4,500. At 17s. 6d., the preference shares yield over 7 per cent., and the ordinary at their current price yield over 6 per cent.

The industry is on a healthy basis, and the share market is in the same state these days. The wild gambling of the crazy rayon boom is only a memory now. Water has been squeezed out of capital where necessary, and the inefficients have gone to the wall. The gambling public has learned its lesson, and no longer buys rayon shares at silly prices on ill-considered guesses at vast profits round the corner. Shares in the field have long since reached a common-sense level, nicely graded in price and yield (if any!) to reflect the relative risks and promise of each producer.

Taking the larger view, the future for the industry is bright. But we are not dealing with absolute certainties. If there were a setback in world demand, there is no knowing what would happen to the industry (except that the weaker units would go to the wall), for the productive capacity of the big producing countries is now geared very high. But there is no sign of any setback, and the shrewdest and most experienced producers anticipate a progressive expansion in demand for some time to come.

World Production of Rayon

All Countries—lb.		*Production by Countries in 1931*	
1892	31 thousand lb.	United States	143 million lb.
1902	5 million lb.	Italy	75 ,, ,,
1912	20 ,, ,,	Germany	57 ,, ,,
1919	40 ,, ,,	Great Britain	53 ,, ,,
1922	79 ,, ,,	Japan	46 ,, ,,
1923	97 ,, ,,	France	39 ,, ,,
1924	141 ,, ,,	Holland	18 ,, ,,
1925	194 ,, ,,	Switzerland	10 ,, ,,
1926	234 ,, ,,	Belgium	9 ,, ,,
1927	291 ,, ,,	Canada	5 ,, ,,
1928	351 ,, ,,	Czechoslovakia	5 ,, ,,
1929	423 ,, ,,	Poland	5 ,, ,,
1930	409 ,, ,,	Others	5 ,, ,,
1931	470 ,, ,,		470

90%

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A WONDER FABRIC OF THE AGE

(Continued from page 407)

thick, or 1,250 films to the inch; and the film is cut into strips as narrow as 0·00984 in. wide, or 100 threads to the inch. When the original idea was projected the engineering problem alone seemed to put it beyond practical manufacturing politics. A machine with a hundred keen cutting edges crowded into one inch was required. A rocket moon machine looks easier to build. However, the machine at last was evolved, and so there was born a new field for rayon, a new textile, a new market for machines and labour. The new yarn is now regularly used by manufacturers supplying woven textiles to the users of dress fabrics. It is used alone, or mixed with silk, cotton, wool, or ordinary rayon.

The development of a technique for mixing rayon threads in varying quantity with cotton and wool has latterly revolutionised the dress fabrics trade and created a new demand. The difficulties that have been overcome by engineers, and chemists, are tremendous. The solution of the single problem of successfully colouring a mixture of wool and rayon—two fibres having quite different dyeing properties—represents an outstanding feat in the technical field. Wool is mixed with rayon to make a variety of materials, including imitation plush.

The latest development is the invasion of the cotton field by the so-called staple fibre, a synthetic cotton which competes with the higher-grade cotton fibre, and opens up new fields of rayon conquest. Back of staple fibre is a whole scientific romance. In the early stages innumerable difficulties were encountered; it was years before the leading producers demonstrated their confidence by re-opening a cotton mill—a 1934 event—to show cotton spinners how the new synthetic fibre can be spun on ordinary cotton-spinning machines.

Now the synthetic cotton fibre has come to stay. It has an excellent wet and dry strength. It has a natural curl. Spinners have no trouble with it. They can spin the short staple rayon into yarns on ordinary textile spinning machines. Production in this country was 3,200,000 lb. for the first half of 1935, about double the 1934 production for the same period. It is quickly expanding. Fabrics spun from the synthetic raw material have a soft wool-like handle. They are already being used for the production of underwear.

The new fibre does not compete in price with raw cotton, and probably never will. But it has a range of qualities which cotton does not possess, and, either by itself, or mixed with cotton or wool, makes possible the production of entirely new types of fabrics. The cotton spinner finds an advantage in the use of the staple fibre in that it comes to him always uniform, clean, and bleached, owing to man-control over its production from start to finish. Natural cotton, largely escaping human control, is full of variations, and the cotton spinner has come to accept the necessity of devoting time, energy, and money to overcoming defects in his raw material. He has to clean it and he has to bleach it—and in bleaching cotton he may lose 10 per cent. of it in weight terms.

THE SOLUTION USED IN THE SPINNING PROCESS: If viscose is slowly poured into a beaker of acid it is precipitated in the form of a continuous thread, the viscose coagulating into solid, pure cellulose, which has most of the properties of other celluloses, such as cotton, but has the additional advantages of continuous length and superior lustre

The national economic factor is also significant. Synthetic cotton means a minimum of money going abroad for raw materials. Cellulose must be bought (Canada and Scandinavia are the chief producers), but the heavy chemicals can be produced inside an industrial state.

Where do we go in rayon from here. Views of authorities differ. Chemists seem to have larger conceptions than the men whose minds and experiences are more closely in touch with the realist problems of commercial and economic statesmanship. It has been suggested that the solution of the technical problem of producing rayon as cellophane (transparent paper) is now produced, in sheets, is bound to come, and that the advent of the new economical process will render obsolete the great weaving industries in this and all other industrial countries. It may be that these profound changes will occur in the distant future, but the chances are that they will not leap out to trouble us in the lifetime of this generation.

So far as the rivalry of rayon, cotton, and wool is concerned, there seems to be room for all in a world which has recovered from the greatest depression in history, and readjusted itself to new things, and moved into a new expansion age. There will be room for both synthetic and natural product, as there is room in the modern world for synthetic and natural nitrate, synthetic and natural oil, tin and substitutes for that high-priced metal, gas, and electricity.

What will probably happen will be an expansion in the use of rayon of all sorts and kinds up to a certain limit, and in the fields where it is competitive with silk, wool, and high-grade cotton on a price and quality basis. But it must not be forgotten that in its mixtures it is rather creating an entirely new demand, than displacing an old material in the latter's own markets. In America, the lowering of real silk prices has had a perceptible effect on rayon use in hosiery mills. In the same field, a recent investigation has shown no tendency for the underwear field to move over from cotton to rayon. Rayon expansion in that biggest of all domestic markets has been achieved without cutting into either silk or cotton. In non-cotton-growing countries, with enforced policies of intense economic nationalism, it is otherwise. But whether that is a temporary or permanent phenomenon is anybody's guess.

In short, the more fanciful implications of the rayon phenomenon in our contempory civilisation may be relegated to the intriguing backwater where repose notions of the ruin of railways by road transport, and the wiping out of the rubber industry by the factory where synthetic rubber is made from coal and crude oil: all possibilities of the distant future, but not coming within the economic or scientific practical politics of a generation which is learning how to control the mechanisms whereby it sustains its intricate and marvellous bread-and-butter life.

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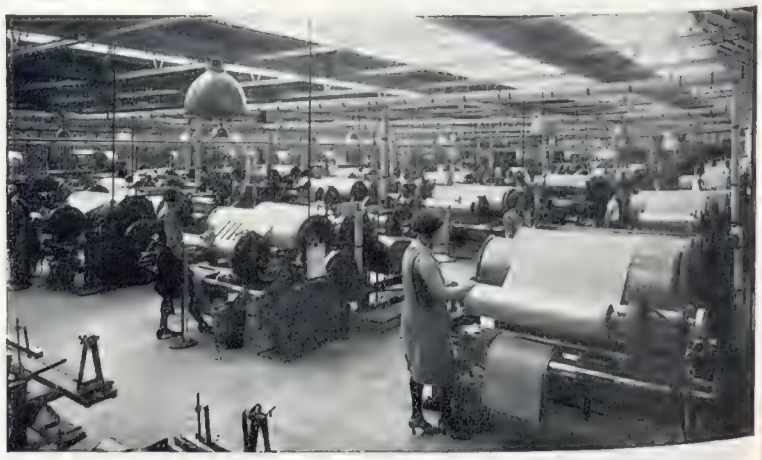

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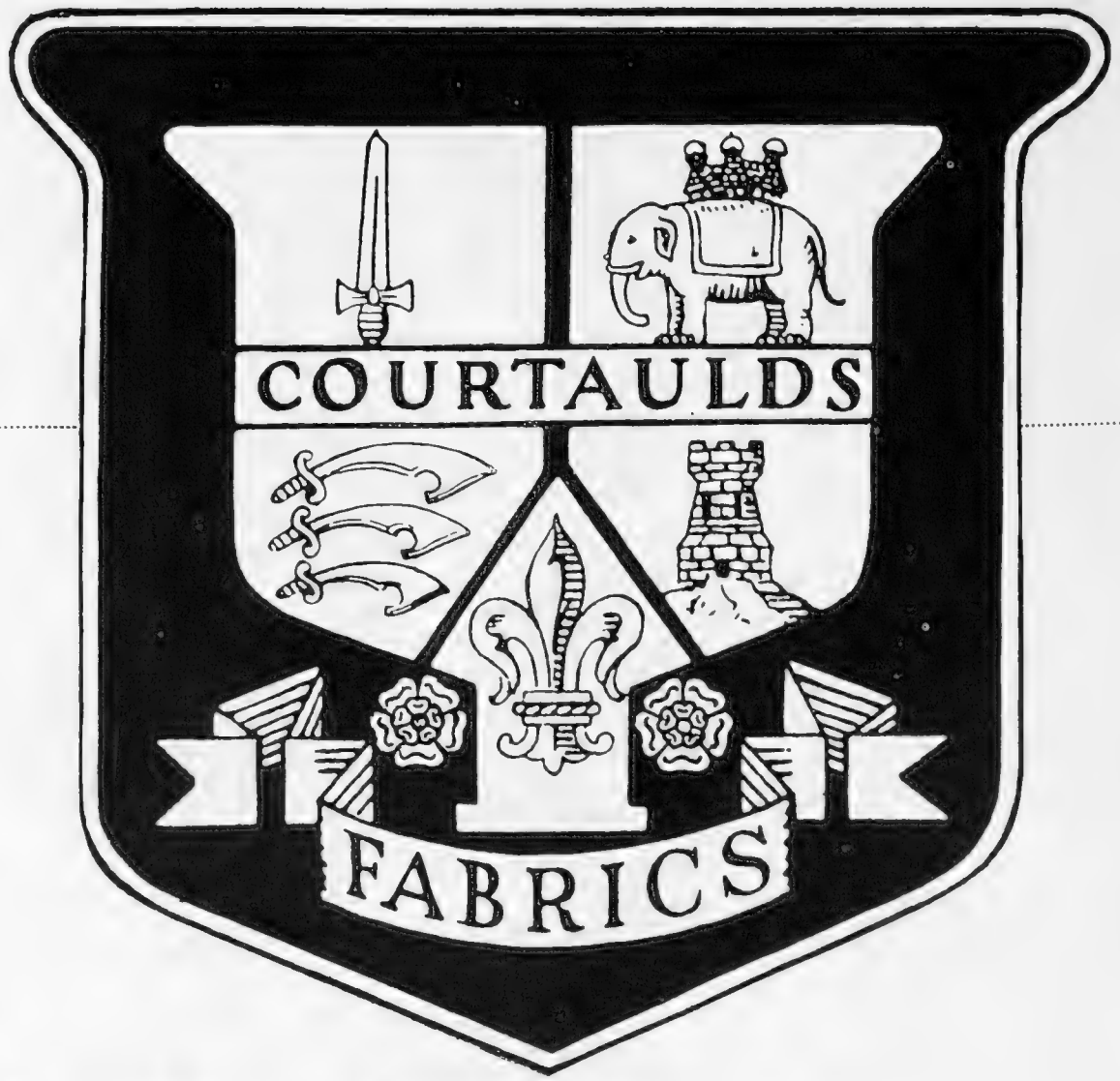

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FROM A DREAM TO REALITY

(Continued from p. 405)

takes them up and round a glass wheel, from which they drop downwards through a glass funnel into the spinning box. The centrifugal action of this box, rotating at thousands of revolutions a minute, throws the wet rayon against the inside face of the box, and by a regular raising and lowering of the glass funnel the rayon is guided up and down inside the box, so forming a large cocoon or "cake." The number of holes in the jet determines the number of filaments or fibres there are in the yarn; the pumping, together with the diameter and revolutions of the glass guide-wheel determines the size or "denier" of the rayon yarn; and the diameter and speed of the box in ratio to the delivery rate of the glass wheel determines the amount of twist which is given to the rayon.

When the "cakes" are completed they are removed from the boxes and after drying may be wound into hanks to be washed and bleached in hank form, or they may be bleached at once in "cake" form. Hank bleaching permits of a careful examination of the yarn before further processing or sending to the customer: "cake" bleaching on the other hand requires less handling, with a consequent less risk of damage to the fine filaments of the yarn, and, when well organised, is a cheaper process than hank bleaching and subsequent inspection. Generally the rayon spinner is not yet finished, as most of his customers will no doubt wish to have the yarn prepared ready to be used at once on their machines; so for weavers the rayon is wound and sized on to warp beams, and wound on to weft tubes; for hosiery manufacturers and circular knitters it is wound on large cones; and for warp knitters it is supplied on little bobbins or ready prepared on beams.

In the early days of rayon production the yarn was so weak, and so little was understood about its characteristics, that its employment was very limited, mainly for embroidery, trimmings, and braids, where strength was unimportant. Not only had the rayon to be improved, but the whole technique of textile manufacture had to be overhauled, and machinery in many cases altered or redesigned. A tremendous amount of stupid and narrow-minded prejudice had to be overcome, opposition to the introduction of the new textile being encountered in all directions. It was in overcoming such prejudice and in developing the technique of the uses of rayon that Courtaulds played so important a part, but their activities in this as in other directions are described in greater detail in the article dealing with that company. In weaving, rayon was used to give stripe effect, in weft and warp. As the skill of the weavers, and the yarns improved, stripes were increased in size, but until satisfactory sizing machinery was produced and suitable size ingredients found, the use of rayon as warp, without the assistance of cotton or silk, was impossible. In a sense, although fabrics were produced to a limited extent before that, the 100 per cent. rayon fabric has only made a marked advance during the last five years, and few rayon warp fabrics were produced before the war. Now almost every type of light fabric for dress, lining, shirting, or upholstery is made with at least a proportion of rayon. A noticeable feature of recent years has been the use of rayon in the very finest fashion fabrics where colour was of first importance, this because fashion designers found that rayon could be dyed with brighter and more intense colours than any other textile.

THE BLEACHING ROOM: Where the yarn, which is supported on aluminium rods, is brought to the desired degree of whiteness before being rinsed and then "whizzed" to remove the excess of water

To the hosiery trade rayon was a gift from heaven. One might almost say that whole towns have grown up to make rayon stockings. It may well be said that before the introduction of rayon, women were conscious of their legs to the extent of always keeping them hidden, but that with the introduction of rayon they became conscious of their legs to the extent of suitably displaying them. There will always be a definite division of opinion as to whether rayon stockings shortened the skirt or the shorter skirt created the demand for the rayon stocking. It is certainly not the case, as has been suggested, that the short skirt was introduced by French designers because of the great admiration French women had for the kilts worn by Scots regiments.

Rayon in underwear was an obvious development in the improving taste resulting from wider reading, improvement in women's magazines, dance halls, cinemas, radio, etc. Only those who can remember the appearance of the clothes lines in the back-yards of any industrial neighbourhood in the late nineties can appreciate the great cultural advance which has taken place. It may well be said that the introduction of rayon has made it difficult to tell the woman of one grade of society from another, as the cost of every type of garment has felt the influence of rayon: not only is rayon itself now sold at a price which brings its products within the reach of all, but it has so undermined the position of real silks that these are sold cheaper than they have ever been.

Fifty years ago rayon was merely an interesting experiment: forty years ago it had reached the stage of being a joke: thirty years ago a very few farseeing firms like Courtaulds were sufficiently interested to take up its manufacture: and since the beginning of the century, world yearly production had increased from 2,000,000 lb. weight to 11,000,000 lb.: five years later the production was nearly 18,000,000 lb., and in the last year before the war it had reached nearly 25,000,000 lb. Production in Europe was restricted during the war and the main development went on in America, but after 1920, when production had reached 55,000,000 lb., expansion proceeded by leaps and bounds, and by 1925 the world was making

(Continued on p. 124)

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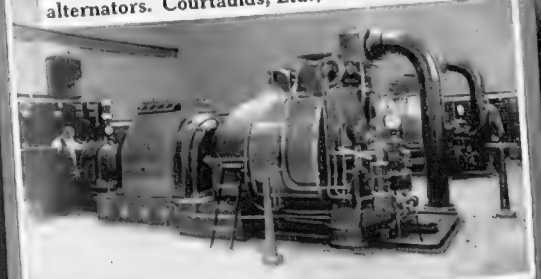

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Employment in the Rayon Industry

New Factories Bring New Hope to the Depressed Areas

By J. BAKER WHITE

SOME day somebody will write the history of the birth and growth to prosperity of the British rayon industry, and when they do they will be able to tell a story that is in some respects unique. One does not have to be very old to remember the first appearance in the home and world markets of rayon yarn and rayon products as a commercial proposition and as an article of public use, yet to-day almost everyone wears rayon, regards it in the same light as the other textiles, and in short accepts it as a necessity of everyday life. Rayon can be very rightly described without exaggeration as a miracle of modern industrial enterprise. Without enterprise, which means research and large expenditure on what may often prove to be fruitless experiment, rayon would never have become a product of daily use. It is one of the things for which the most ardent advocate of state control of industry has to thank the courage of private enterprise.

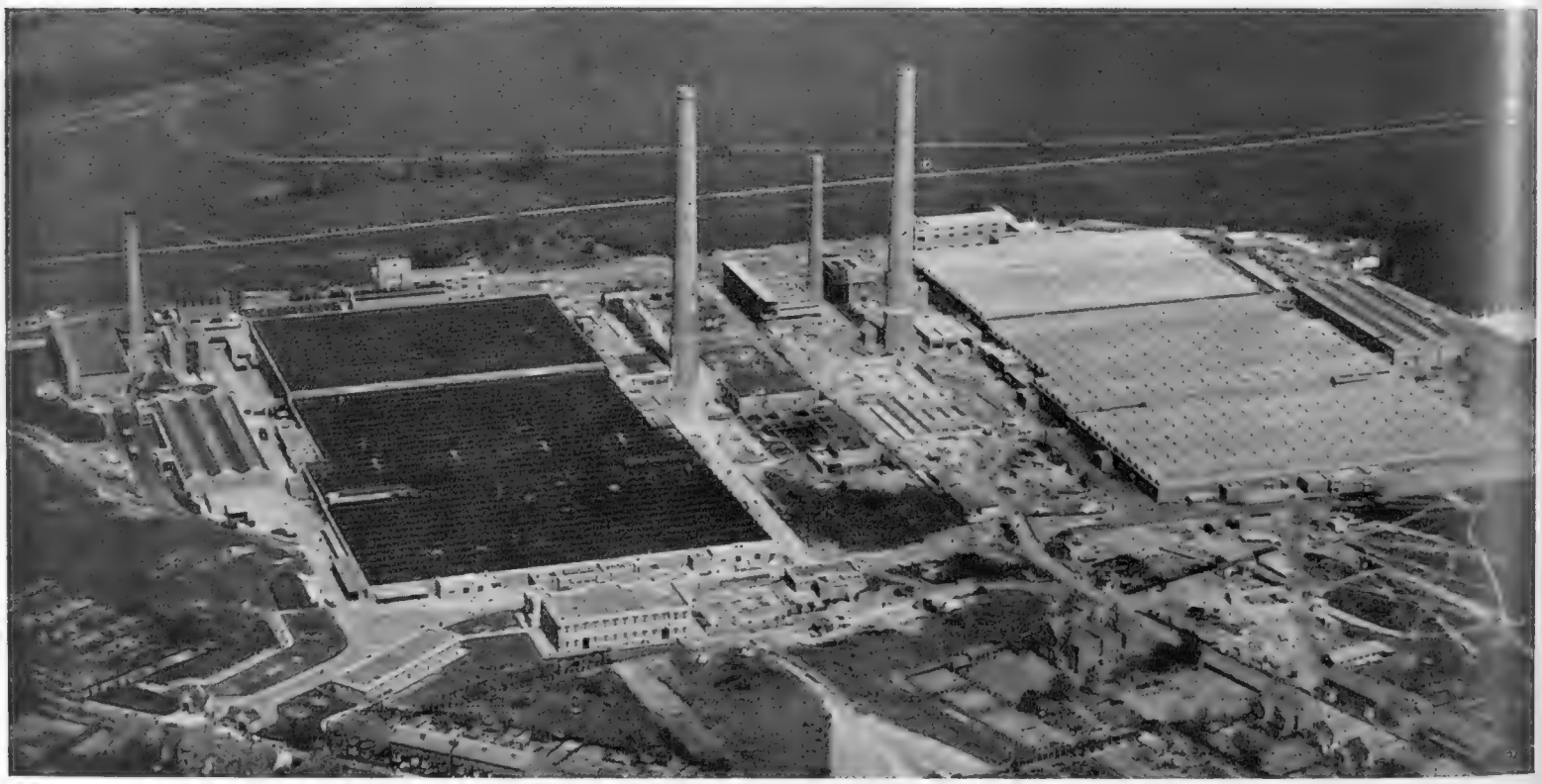
The statistics that are kept by the Ministry of Labour—incidentally the most accurate in the world—of the persons employed in the various industrial groups illustrate how rapid has been the development of the rayon industry. The Ministry's statistics up to 1929 did not regard the industry as being worthy of special classification, there being merely a category under the heading of Textile Trades of "Silk and Artificial Silk." To-day they are far more detailed. They show that the number of insured persons in the group designated as "Silk and Artificial Silk Weaving" is 48,170, and in artificial yarn manufacture an additional 25,150. In fact, there are close on 75,000 persons who are dependent upon these trades for their livelihood, and as our home silk industry is of diminishing importance the majority of them are dependent upon rayon.

The rayon industry, like the lace industry, uses a large proportion of female labour and close upon 40,000 women and girls are employed in it. This is not because the rayon firms have tried to secure cheaper labour, but because experience has shown that women work better than men on machines producing a delicate material such as rayon yarn. Its production does not require great physical strength, but although the machine plays a very important part it does need careful and considerate handling. It is also a matter of interest that women have acquired by their efficiency and capability a predominant position both in the designing of the goods that are manufactured from rayon yarn and in the wholesale and retail marketing of them. It is often said by embittered critics that rayon has "ousted" cotton and wool, to the consequent detriment of Lancashire and Yorkshire. While it is certainly true that many women who would have worn woollen or cotton stockings say fifteen years ago now wear stockings made of rayon yarn, and while it is equally true that many of them are probably operatives working on cotton looms or in woollen mills, the older textile areas have not been forgotten by the rayon manufacturers. Realising the skill of the textile operatives, a skill that has been bred generation upon generation, they have endeavoured to provide employment where possible for these operatives.

MAKING THE WARP: The threads of yarn are drawn from the bobbins through a fine comb and then rolled on a revolving circular frame

Of this there are many examples. For very many years Macclesfield in Cheshire has been the traditional centre of the real silk industry in this country. To-day, in the neighbouring town of Congleton the "artificial silk" industry is making such rapid strides that it has already overflowed to the nearby town of Middlewich. Mossley in Lancashire was for many years a great cotton manufacturing and dyeing centre, and it was very hard hit by the decline in the county's basic trade. Now a new industry, the dyeing of artificial silk, has been introduced into the town, and a dye works closed down some years ago has been adapted for the new process. In addition, an old cotton mill has been taken over by a firm of artificial silk waste manufacturers.

(Continued on p. 422)



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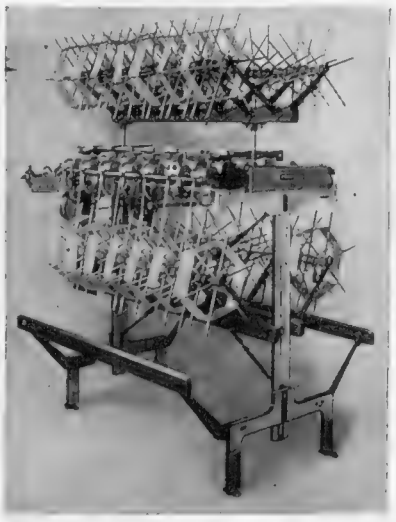

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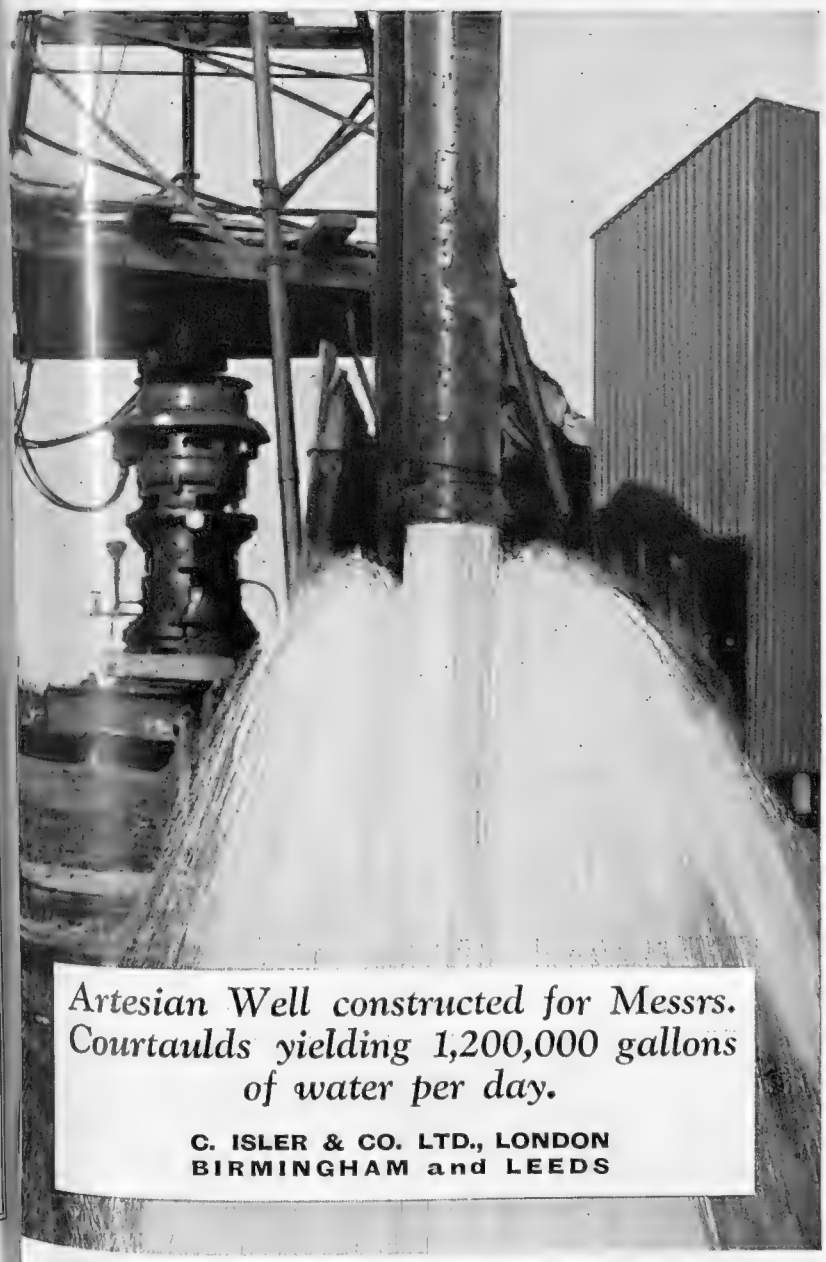

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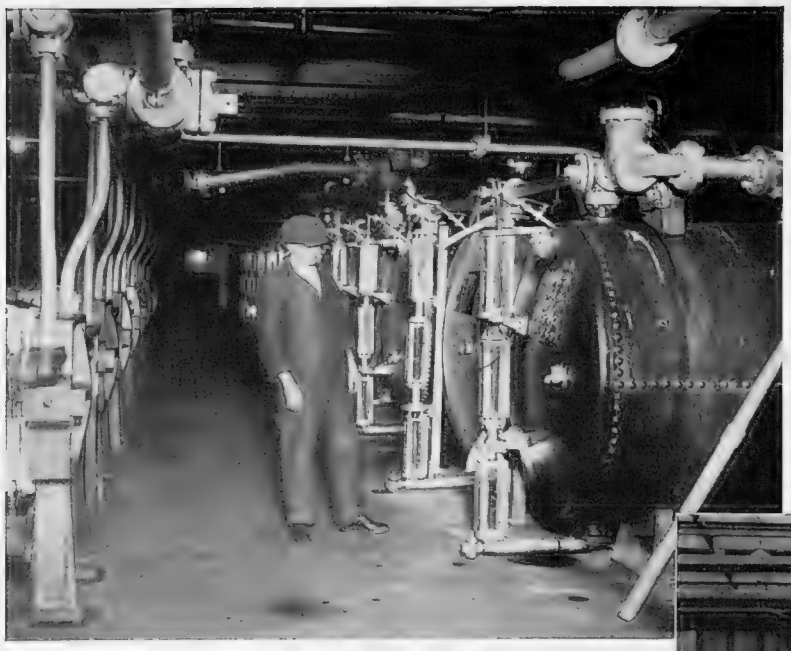


WHERE THE VISCOSE IS "AGED" BEFORE IT IS READY FOR CONVERTING INTO THREAD: A row of storage tanks in which the treacly liquid matures. During this stage it is placed under a vacuum to extract the air bubbles which would interfere with the work of spinning

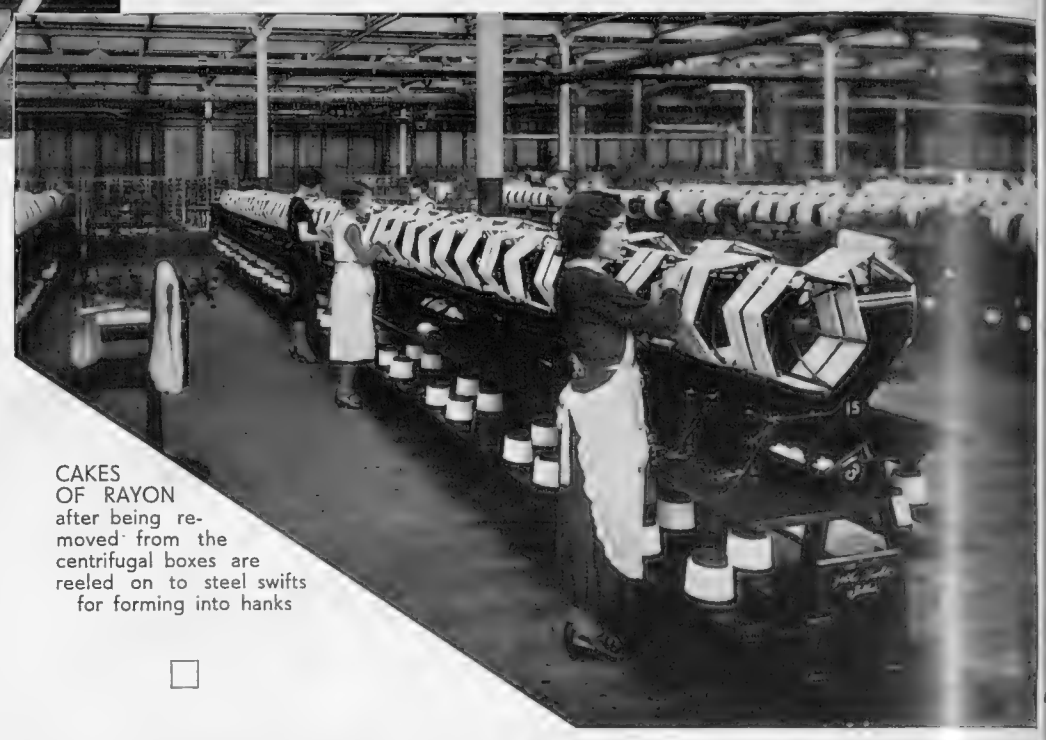
EMPLOYMENT IN THE RAYON INDUSTRY

(Continued from p. 420)

In Cheshire an Italian firm has established a plant for the manufacture of a special kind of artificial silk fabric, and special machinery has had to be imported. It is also a sign of the times that the Shirley Institute in Manchester has to-day one of the best equipped research and test departments in the world for rayon products. Even more striking, however, is the decision, announced in April last, of one of the biggest firms in the rayon industry to establish an enormous new plant in the heart of the Lancashire cotton area. It is not only one of the most important industrial developments in the country in recent years, and one which will have an influence on the national employment figures, but a tribute to the skill of its workers by a great firm with world-wide connections.

This firm has had for some years a 340-acre site at Ribbleton, near Preston, and on it will be constructed the firm's largest single unit in Britain, embodying in it many new features and improvements in production processes. The new plant should be able to provide employment for 2,000 operatives, increasing to 3,000 when it reaches full production, and it should add at least 30 per cent. to the firm's production of viscose yarn. Water in large quantities is an essential factor in rayon production, and the municipality of Preston has made arrangements to supply up to 1,000,000 gallons a day, while the firm has also excellent artesian wells. It is rumoured that this plant is but part of a plan providing for two viscose units with a total of 25,000 spindles and another factory in which the cellulose acetate process would be carried out. The whole scheme would provide work for about 6,000 operatives.

From the point of view of those employed in it the rayon industry is particularly attractive. Being of post-war growth and born in the electrical age its plants include all the advantages of modern factory construction. Some, like a huge plant in the heart of Essex, are right away from the old factory areas and provide employment for many who probably would never have entered industry at all. They are light, airy, and remarkably well equipped with canteens and welfare facilities. It is perhaps a reflection of working conditions in the rayon industry that it has been remarkably free of industrial disputes. It is one of the most prosperous in the country, and the measure of its prosperity can be gauged from its low percentage of unemployment—about 10 per cent. in the weaving section and 7·6 per cent. in the yarn section.



CAKES OF RAYON after being removed from the centrifugal boxes are reeled on to steel swifts for forming into hanks

□

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A Chronological List of Important Events in the History of Rayon Manufacture

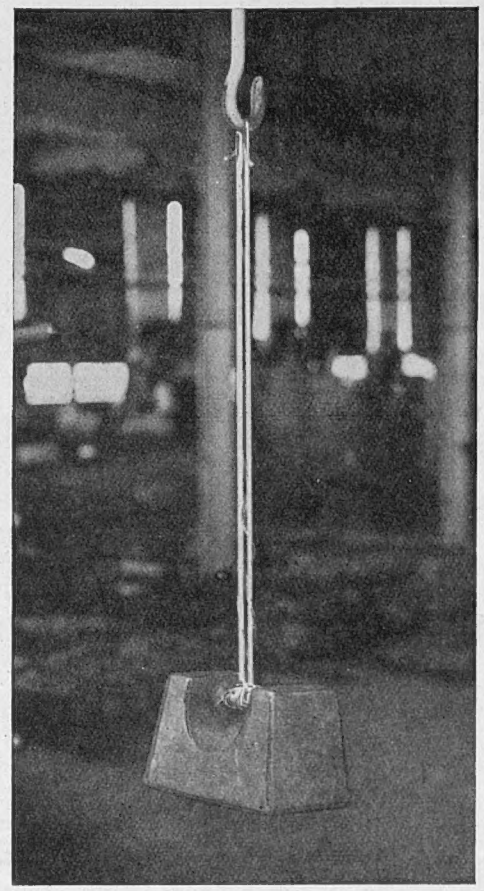
1664—Dr. R. Hooke hinted the possibility of the production of art. silk.
1734—R. A. Reaumur also hinted the possibility of making art. silk.
1840—Count Hilaire de Chardonnet was born.
1855—Audemars took out first patent on a silk substitute (nitro-cellulose).
1882—Weston uses art. filaments in electric lamps.
1883—Sir Jos. W. Swan, English scientist, first discoverer of art. silk.
1884—Count Hilaire de Chardonnet took out his first patent.
1889—Count Hilaire de Chardonnet begins commercial manufacture of art. silk.
1891—Starts a plant at Besançon, France. Daily output fifty kilos nitro process.
1892—Cross, Bevan and Beadle invent viscose process in England.
1898—C. H. Stearn uses Cross, Bevan and Beadle patents.
1900—Topham patents his first pot-spinning machine.
First viscose-process yarn exhibited in Paris.
1901—Stretch spinning process introduced by Dr. E. Thiele in Germany.
1904—Courtaulds, Ltd., begins operations in England, viscose process.
1908—First Italian rayon factory built.
1910—Viscose process started in America by the Viscose Co.
1914—World War brings industry to standstill.
1920—C. & H. Dreyfus produce art. silk by acetate process in England.
1924—Word "Rayon" adopted for regenerated cellulose yarns.
1924—Count Hilaire de Chardonnet dies in Rome; Lilienfeld process patented.
1926—Rayon being made in every civilised country. World produced 224 million pounds.

FROM A DREAM TO REALITY

(Continued from page 418)

almost 200,000,000 lb. weight: then there was an intense period of promotion, mainly profitable to the promoters, and production by 1930 had reached about 470,000,000 lb.: and so development continues—last year the production was about 750,000,000 lb., and this year it will be well in excess of 800,000,000 lb.

What of the future? It is quite evident that not only has rayon come to stay but it is definitely the forerunner of the principal textile industry of the future. Already big strides are being made in the development of other possible uses of rayon, especially in the cut form known as "staple fibre." As the knowledge gained from the manufacture and use of rayon staple fibres develops, the material itself will be improved, just as the continuous yarn was improved through knowledge gained in its use, and an important and growing use of rayon products will be built up, with the result that synthetic fibres will to an ever-increasing extent displace the older fibres we obtain direct from nature.



A SEVERE DURABILITY TEST: A 28 lb. weight suspended on thirty-six strands of yarn

THE ROMANCE OF COURTAULDS

(Continued from page 410)

was taken in the chief Italian company. The American company was also expanded, and as a separate rayon-producing concern is easily the largest in the world. Developments have also been taking place in England. Two big new factories have been started at Wolverhampton, a cellulose acetate factory was put into operation in 1928 at Coventry, and further extensions have been made on viscose factories at Coventry and Flint. At the present time a new factory for staple fibre is nearing completion at Holywell, near Flint, and a 340-acre site is being developed at Preston, where two viscose factories and one acetate factory are arranged for. These English extensions are being made at a cost of £6,000,000. Also, as a £900,000 subsidiary company, the British Cellophane, Ltd., is constructing a new factory at Bridgwater for the manufacture of transparent paper.

Courtaulds Limited is not only far and away the most important British rayon company, its production being more than that of all the eleven other producers combined, but it is quite easily the largest and most successful textile concern in the world. After examination of all the circumstances this can only be considered as a wonderful achievement, of which this country may well be proud. Before Courtaulds, others tried to make rayon in this country without success, and others since, jealous of the profits Courtaulds made, have attempted to emulate them. At different times over thirty British companies have been formed to make rayon yarn, twelve only are producing to-day, and Courtaulds is the only one out of all these which has consistently paid a dividend on its ordinary shares. The difficulties and the failures of the many other concerns is the best testimonial to the wonderful success of Courtaulds and the ability of those men who have been responsible for its development.

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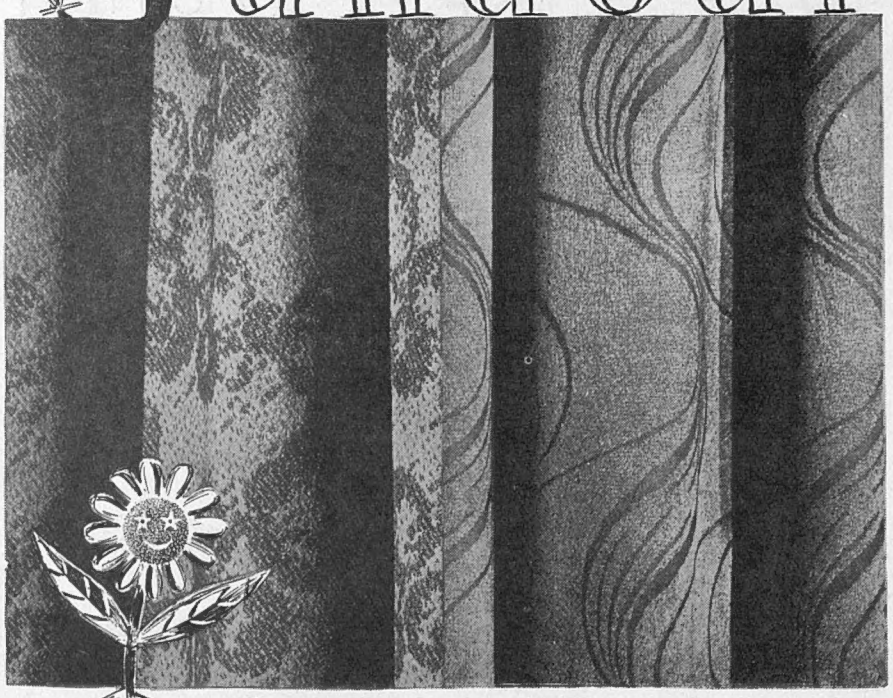

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TRAVEL NOTES of the WEEK

Answers to Enquirers

P., France (Bermuda, Bahamas, Jamaica, Madeira).—Both Bermuda and Nassau are expensive resorts, and for accommodation in hotels comparable to the one you mention you would have to pay at least 30s. per day. If you particularly wish to visit the West Indies we suggest you select either Jamaica or Barbados where the cost of living is less expensive. The best hotel in Kingston, the Myrtle Bank, which is extremely good, charges 25s. per day, while the leading hotel in Barbados, the Marine at Hastings, charges £1. Both islands would be somewhat warmer than Bermuda or Nassau, but there are several pleasant hill resorts in Jamaica, while Barbados, lying in the track of the N.E. trade winds, has a bracing climate. Madeira's winter climate is warm and sunny, though rather relaxing. The average winter temperature ranges from 70·3° Fah. in October to 64·8° Fah. in May, February being the coolest month with an average temperature of 60·6° Fah. The climate at the top of the Mount is less relaxing, and here there is the Grand Hotel Belmonte, which charges £1 during winter. Down in Funchal and overlooking the sea there is the Savoy Hotel, which charges from 15s. per day, and Reid's Palace Hotel, which charges from 26s. per day.

M., East Lothian (Germany).—The rate for transporting a car from Leith to Hamburg by the James Currie Line of 16, Bernard Street, Leith, is 82s. 6d. per ton, and 90s. per ton back from Hamburg. The charge for passengers is £9 return, the voyage taking about forty-four hours. There are also regular sailings from Dundee to Hamburg, the fares being the same. The various papers and permits for the car will cost £2 10s., these being obtained through the A.A. or R.A.C. Registered marks can now be bought at the rate of about twenty-one to the £. They cannot be purchased in Germany, though they can be obtained from any bank or travel agency in Great Britain, the drafts being cashed at any bank or railway station in Germany. Each visitor to Germany may draw up to 50 marks per day.

C., Norfolk (Mexico).—The single and return 3rd-class fares from Southampton to Vera Cruz via the Hamburg-American Line are £19 and £38 respectively. The single and return tourist class fares are £30 and £54 respectively. The train fare from Vera Cruz to Mexico City is 8·20 American dollars.

T., London (New Forest).—At Brockenhurst on the southern borders of the New Forest, where there is a railway station, there is the Forest Park Hotel. The Evergreens Private Hotel at Lyndhurst, in the heart of the forest, should also suit your requirements. There are buses from Lyndhurst to the railway station.

B., Lancs.—For comfort at reasonable rates we advise you to travel to Australia on a one-class tourist class boat. The return fare by Orient Line in this way would be £76 minimum in a 3-berth cabin, and £79 for similar accommodation by the P. and O. Line. There are cheaper return fares by both lines, but as these provide for accommodation in a 4- or 6-berth cabin, we advise you to pay the extra few pounds for accommodation in a 3-berth cabin. The Orient liner *Ormonde* leaves London on December 7, the P. and O. liner *Mongolia* leaving London on November 29. Both ships carry tourist class passengers only.

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